Issue 26 £1

March/April



INCLUDING STAGE FOR ST USERS

SOLID MODELLING

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for ST users

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HARD DISKS

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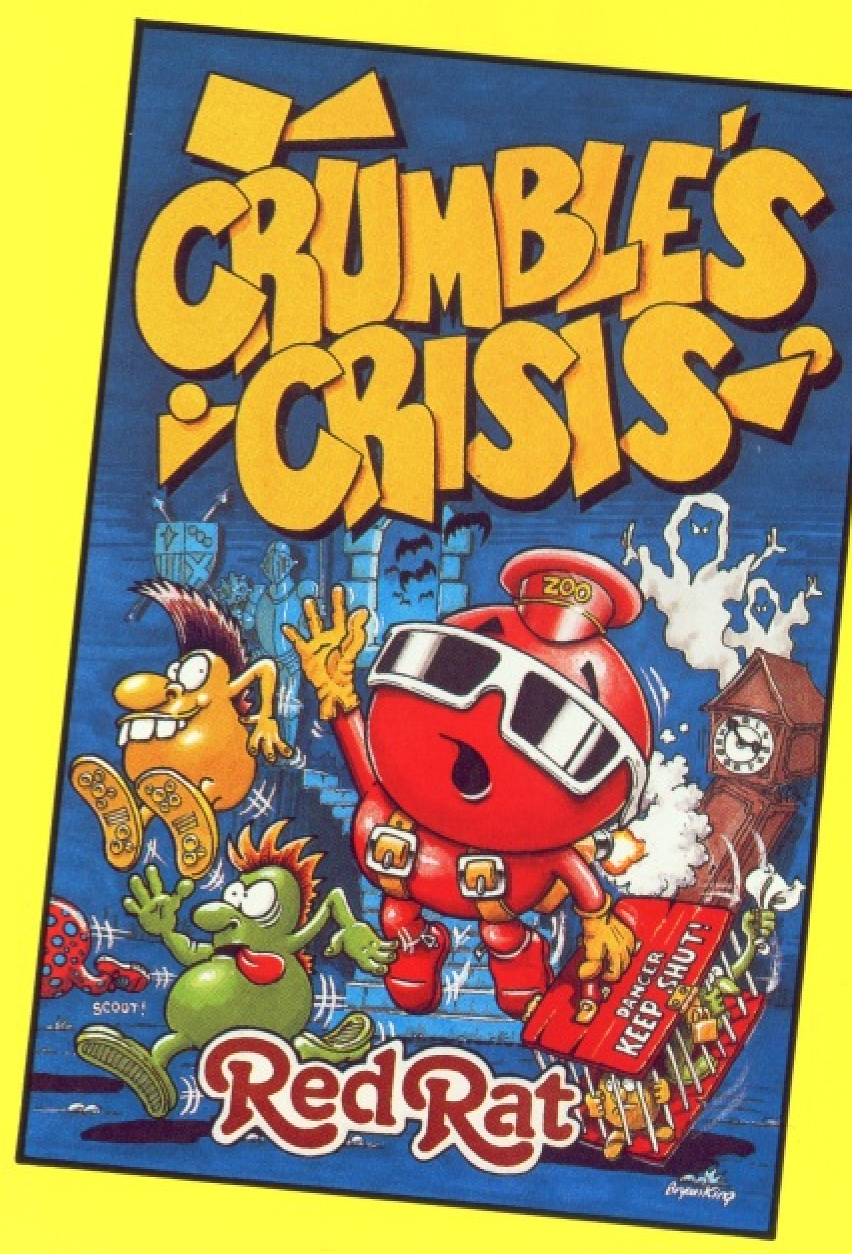
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FLEXIBLE FINGERS!

DISK SECTOR EDITOR

REVIEWS TRIVIAL PURSUIT -- RICK HANSON -- WAR HAWK
LASER HAWK -- THREE INFOCOMS

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'The magazine for the dedicated Atari user'

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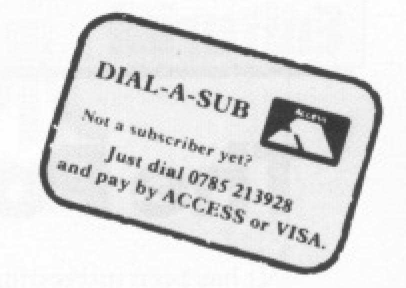
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PAGE 6 is published bi-monthly on the 1st of each alternative month.

PAGE 6 is a users' magazine which relies entirely on readers' support in submitting articles and programs. The aim is to explore ATARI computing through the exchange of information and knowledge. We will endeavour to pay for articles and programs where appropriate and we hope that readers will enjoy seeing their work published. In turn we hope that other readers will learn from the articles and programs submitted and increase their enjoyment of ATARI computing.





Issue 26

March/April 1987

LISTINGS

FEATURES

STAGE

REVIEWS

Subscription rates – annual (6 issues)

U.K.	**£ 7.00**
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U.K.	**£30.00**
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Single copies and back issues at one-sixth of the annual rates.

Please make cheques payable to PAGE 6.

The Poll...

It has been interesting glancing at your comments on the Readers Poll cards about what you would like to see in the magazine, even though I have not had a chance to look at them fully. What comes out clearly is how subjective many people are, with the expected comments of 'less ST coverage' or 'more ST coverage' and 'less games listings' or 'more games listings'. A number of readers went the whole way and asked us to drop all ST or 8 bit coverage depending on their own systems. What we were really looking for were suggestions for specific articles and programs and there were indeed plenty of those, but the 'more /less' comments proved how very difficult it is to be objective. Everyone is coloured to some extent by their own likes and dislikes, even if they are producing work for others, and it brought home just what a difficult job it is to review software and get together a balance of articles in a magazine to suit all tastes. I have in past issues included several programs that did not particularly interest me personally, although judging from the votes in the readers poll, getting a wide cross-section of articles and programs is the right thing to do and I hope that we have been objective in the past and can remain so in the future.

One comment made by several readers was that we should drop all the long program listings because 'nobody bothers to type them in' but I can assure you that they do! Aside from the fact that we are the only magazine in this country willing to print really long listings, many readers find them instructing and even a challenge. Often I have tried to help someone who is stuck with a listing and when I can't suggest any more ways round a problem, I may suggest that the reader buys a copy of the appropriate issue disk with the program ready to run. Most readers decline this, not because of the cost, but because they want to get it right themselves. Typing a long listing correctly and getting it to run as intended is a challenge in itself, almost as challenging as writing your own programs, and for many people it is satisfaction enough. Additionally, typing in and debugging program listings is the best way to learn how to program yourself, that's how I learned and so did many others. So, the long program listings will continue as long as you send them in!

Next issue I will bring you a run-down of the comments in the survey, and the results of the Readers Poll, so that anyone itching to write an article for us might be inspired with ideas. In the meantime I will leave you with one comment on the survey form which really had me puzzled. 'No 8-bit items and less ST'!!! Now that would be really easy!

News

BECOME A MILLIONAIRE!

Microprose Software, the company known for some of the very best simulations on the Atari, opened offices in the U.K. towards the end of last year and are now actively looking for top class Atari software writers with the promise of making them 'millionaires almost overnight'!

Stewart Bell, managing director of Microprose in the U.K. was quite outspoken towards the end of last year about other software houses who he claimed treated end users as if they had 'IQ's less than orang-utans' and he wanted higher standards for the Atari, based on Microprose's own unequalled excellence in developing simulation software. Now, Simon Barnard, software development manager has started the hunt for Atari programmers who can come up to the company's high standards, not only in developing simulations but also arcade style games.

Any programmers with ability can expect full co-operation and support from Microprose who claim to spend in excess of $1 million in the States developing its simulation blockbusters. If you fancy your chances give Simon Barnard a ring on 0666 54326 or drop Microprose a line at Microprose Software Ltd., 2, Market Place, Tetbury, Gloucstershire, GL8 8DA.

Apart from the chance of getting even more quality software, Microprose setting up in the UK must be good news for all Atari owners with increased availability of their existing titles, including F-15 Strike Eagle, Kennedy Approach and Crusade in Europe among the eight Atari 8-bit titles currently available on both disk and cassette.

INFOCOM GOES TO HOLLYWOOD

Next in Infocom's famous series of adventures is Hollywood Hijinx a 'wacky tribute to 'B' movies'.

You have inherited the entire estate of your Hollywood mogul uncle Buddy but with one stipulation – you can only claim your booty if you find ten treasures hidden throughout the sprawling mansion, and you must find them all in one night! Infocom say that the game is loaded with puzzles that recall the pure logic problems of Zork and contains one of their zaniest puzzles yet. On Atari XL/XE at £24.99 and ST at £29.99.

News

ANOTHER ADVENTURE NEWSLETTER

Sandra Sharkey is the Editor of a nice little Adventurer's newsletter called Adventure Probe. It doesn't feature much directly about the Atari but that is probably because none of you actually subscribe and write to her! What it does have, which could be of interest to anyone having problems with an adventure is a whole series of maps and solutions to over 130 adventures(!), many of which appear on the Atari.

Plenty of hints, gossip, help and adventure trivia in the newsletter which, unusually, is available on a subscription from as short as 1 month to 12 months. Send a s.a.e. to Adventure Probe, 78, Merton Road, Highfield, Wigan, WN3 6AT for more details.

WHO'S BRIAN CLOUGH?

Surely you must know? He's some sort of wizard computer programmer from Nottingham, isn't he? He must be because he has a new game out from CDS Software called BRIAN CLOUGH'S FOOTBALL FORTUNES.

Claimed to be different from other computer games, because it is in fact a 'board game' (I'm confused!), it is said to combine the speed of computers with the social aspects of best selling board games and was written with plenty of advice from Brian Clough himself. I bet those programmers went through hell! Between two and five players take on the role of team managers and each must steer his team through the season in a ten strong league with other teams managed by the computer or other players.

Lot's of extras with the cassette or disk, including a playing board, players cards and money! Prices are £14.95 on cassette and £17.95 on disk. Should be in the shops now.

MORE BUDGET TITLES

Look out for more goodies but cheapies from Mastertronic. Scheduled for release at the beginning of the year were Gunlaw, Masterchess, Back To Reality, Despatch Rider and Xcel.

Keep 'em coming, especially if they are good!

WAR GAMES AND PRINT SHOP?

In a very welcome move, providing they can actually get everything onto the market in reasonable time, U.S. Gold have announced that they have acquired the rights to the range of SSI and Broderbund software which includes some of the most famous wargames of all time as well as long established classics such as Print Shop. Virtually the whole range of SSI products will now be marketed by U.S. Gold at (hopefully) reasonable prices, certainly less than the £50 or more you have had to pay for imports up to now.

The Broderbund range includes a whole variety of programs and their back catalogue will appear on the budget Americana label. As well as best sellers such as Print Shop there will be a series of interactive adventures.

U.S. Gold's press release doesn't actually say that there will be Atari versions of all the titles but seeing as both companies made their names with Atari in the States, we can but hope for a real bounty!

Don't miss this launchpad for all that's new in Atari computing

ATARI COMPUTER SHOW

10am-6pm Friday, April 24
10am-6pm Saturday, April 25
10am-4pm Sunday, April 26

Champagne Suite, Novotel, Hammersmith, London

MORE arcade games
MORE bargain offers
MORE business software
MORE graphics packages
MORE hardware add-ons
MORE utility programs
MORE adventures

On display for the first time in the UK will be new Atari products that are set to rock the micro world.

Star of the show will be Atari's IBM PC compatible, offering a radically new design at a price that will revolutionise the PC marketplace. There, too, will be the latest models in the ST range – the Mega ST workstations. Plus the remarkable Atari laser printer, the machine that has broken the price barrier in desktop publishing.

All of these – along with breakthroughs for the ever-popular 8-bit range and hundreds of new software packages – will be on display at the April Atari Computer Show.

Send for your advance tickets now – and SAVE £1 a head!

Advance ticket order

Please supply:

☐ Adult tickets at £2 (save £1) .... £ ______
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TOTAL £ ______

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Access / Visa

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Admission at door: £3 (adults), £2 (under 16s)

POST TO: Atari Computer Show Tickets, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY

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POWER WITH THE PRICE?

Dear Les,

I am somewhat disappointed with the price of software for the ST computers. I believe that software suppliers may well jeopardise the growth and health of the ST computers. In many cases the prices charged are simply too high. One of the main reasons for people buying the ST computers is their remarkable price but you cannot have 'Power without the Price' if the software is ridiculously costly.

If things don't change, I believe we could well witness the slow strangling of the ST computers just as we witnessed the same thing happening to the 8 bit computers. That was a terrible shame. If software suppliers were not so greedy for immediate high profit margins and went for a slower and greater penetration of the market, the Atari 8 bit computers would be where they have long deserved to be – at the very top of the mass market for quality home computers. Everyone would be happy then.

M. Jackson
London

I agree that the prices are high for ST software and would like to see them come down to more sensible levels but the argument is quite complex. The major problem is that there are simply not enough ST's around in the U.K. to bring prices down to the level of most 8 bit software. Many 8 bit programs (not necessarily Atari) sell in tens of thousands but one major ST publisher who spent over a year developing a game has set a target of 2000 units at maximum. The product sells at £35 so you might think that £70,000 is a lot of money but the company will see less than half of that, maybe £25,000 at most. If they have four or five programmers and all the usual overheads there is not much profit left for future development, and remember it might take 18 months to reach that 2000 target. This is just one example, although maybe not typical. Other smaller, part time, companies could produce software more cheaply but they are often the ones who fail to advertise and distribute effectively and so end up with even less to live on. Like I said the situation is complex and will not change until there are a lot more ST's around.

DON'T MAKE US BLUSH!

Dear PAGE 6,

Congratulations. I think it has to be said once again. PAGE 6 really is the best magazine I have ever seen. I started my subscription about a year ago and I am still very happy with it. Since there are no magazines for Atari published in Switzerland I appreciate the PAGE 6 magazine very much. I've changed to a disk subscription and although it is great to receive the programs on disk at the same time as the magazine, I would like to remark on something. The title screen with the plane is very well done but the sound is a bit disturbing, at least to my ears!. Maybe you could have a look at it? Apart from the noise, the disk is a great pleasure each time. Together with the magazine it gives me the only chance to take part in the world of Atari. Thank you, and don't stop!

Marco D'Alessandro
Zurich, Switzerland

Thanks for the kind remarks. See elsewhere in this issue for a contest to find a new title program for the disk. Let's hope the winning title is a bit quieter!

PAGE 6 NOT UP TO SCRATCH!

Dear Sir,

I am a 100% Atari enthusiast. I purchased my 800 at the premium price plus all supporting hardware. Over the last four years I have slowly gained an insight into the system mostly through the American magazines and publications. The English publications just do not match the technical standard and seem to be more concerned with boosting sales of software. For instance DOS PLUS from Analog is a superb program and worth the price of the magazine.

Now the reason for this letter is the subtle promoting of the ST from all the UK media and the total lack of either the ST or the 800 series in the shops where we originally purchased them, also the price of software and add-ons to achieve a satisfactory system. In answer to your poll, I will not buy the ST and would like to see a magazine devoted to writing programs, not buying them, and to fully explore the potential we already have 'cheaply'.

V. Wood
Burnham on Crouch

Is he talking about us? I think that PAGE 6 has published some of the very best programs for the Atari to have been seen in this country and many which are better than a lot in the American magazines, but then I would, wouldn't I? And I seem to recall one or two articles on programming, don't you? I will report on the flood of letters supporting Mr. Wood in the next issue.

Write to READERS WRITE, P.O. BOX 54, STAFFORD, ST16 1DR

FOOTBALL FANATIC

Dear PAGE 6,

I wonder if you could help me. I own a 520STM and single sided disk drive and I would like to put together a system that will enable me to make a record of the games my favourite football team have taken part in. This would involve all types of games and should include such facts as competition, venue, season, opposition, score and scorers.

What type of database software will I need? Will it be possible to output the results from the database into a graph program like K-Graph? I would also like to know if I will need any further hardware, given that the database should have possibly 8,000 matches over all competitions. So what would I need? More RAM? Two double sided drives? Hard disk? I would consider any of these if it is needed.

Peter Prendergast
Ibrox, Glasgow

They certainly take their football seriously, these Scots. A hard disk just to record your teams results?? Seriously though, you might just need a hard disk if you want 8000 records especially if they contain a lot of fields. Almost any database will do what you want and most can output files to be used for graphing but you should avoid those databases which are fully memory resident as they will not hold that amount of information. Best get something like Dbase II, or a clone, which is totally flexible although you will need to learn how to program it. I use H & D Base (sadly no longer available) and purchased it because it was flexible enough to combine databases together over several disk. This means that you can start out with a single sided drive and several disks, with perhaps five years results on each, and then upgrade to 2 double sided drives and, with some fancy programming, use two separate disks as one combined database, with a total of 20 years results to each

database. Later, as your database (and your finance!) grows you can go onto a hard disk and combine everything into one with very little effort.

It is difficult to give precise advice without discussing the exact requirements (don't ask, I don't have time!) but anyone thinking about a very large database should check the software carefully. If it is memory resident or restricts the database size to just one disk, it will not do what you want. Think ahead, maybe hard disks will really come down in price. What would you do if you had spent a year typing in data only to discover that you can't transfer, and combine, it all into one database?

NOT IMPRESSED WITH THE XMM801

Dear Les,

After reading the review of the XMM801 printer in issue 25 I felt I just had to write. I purchased one of these printers a while ago and at the time I was assured that it was totally Epson compatible. I got it home and quickly booted up Print Shop using the Epson driver and expected to see a welcome message printed. Instead the printer just started printing a load of rubbish and feeding a lot of paper. We went through all of the printer drivers and they all produced the same result. Many other programs that work with Epson printers did not work. The XMM801 is NOT fully Epson compatible.

In addition, and with respect to Rob Anthony, the printer does not support NLQ. Just because a printer supports double strike does not mean it is NLQ. NLQ is made up of the printhead first printing part of the character in outline and then returning to overlay the dots to complete the character.

I returned the printer and got a refund and have since heard that the XMM801 has been withdrawn from sale. Maybe it was not as good as made out and was just overpriced?

Andrew Banner
London

One company's NLQ is anothers double strike and the same goes for Epson compatibility. Although dozens of manufacturers claim Epson compatibility what they often mean is that they use the same control characters as Epson to achieve similar results. Many manufacturers overlook the graphics side and this is where the 'Epson compatibles' often fall down. Caution with any printer is the answer although I still think that the XMM801 was good value. Does anyone know of another printer for £175 that does not need an interface for the Atari, especially one that is totally *Epson compatible?*

I understand that the XMM801 has indeed been withdrawn but I heard a rumour that it was because Atari had discovered another cache of 1029's that the want to get rid of!

THAT OLD POUND SIGN AGAIN

Dear Les,

In the First Steps column of Issue 25 you printed a tip from Mr J.E. Robinson about printing the £ sign using Atariwriter and the 1027 printer. The problem with typing the five CONTROL-O codes as printed is that the sign is automatically followed by a space. It is, however, possible to print a number straight after the sign and it is quite simple. All you need to do is to type a zero before the 24 after the last CTRL-O and follow it immediately (no spaces) with the value. Thus to get £50 you type:

CTRL-O 27 CTRL-O 23 CTRL-O 08 CTRL-O 27 CTRL-O 02450

Don't forget that the CTRL-O is the letter O and the others are numbers.

There is still one problem though. When using the £ sign in this way, Atariwriter fails to count it as a character. If you are justifying or using the full 80 column width this leads to some odd effects. Justifying with less than 80 characters gives a longer line and if the line is already 80 characters long, the last character spills over to the following line. Locally redefining the line length solves the problem but is tedious. Do any readers know of a way round this problem?

Chris Read
Milton Keynes

HACKER PROBLEM SOLVED

Dear Les,

In reply to Paul Cole's letter in issue 25 concerning Hacker, I believe that when the game is completed the headlines are sent to a printer, at least on the disk version.

I have not yet completed Hacker but gained the above information by using a sector editor to look at the disk. It is quite possible that when Paul completed the game the program was sending information to a printer and crashed because there wasn't one.

John Fallon
Birmingham

Several other readers wrote with the same comment so it may well be the answer. If so, what an incredibly bad piece of professional programming not to trap for a non-existent printer! Perhaps all these 'big company' programmers are making so much money that they have lost touch with the end user and assume that everyone has a printer. After all they are only a couple of hundred pounds aren't they!!

THANKS COMPUMART

Dear Sir,

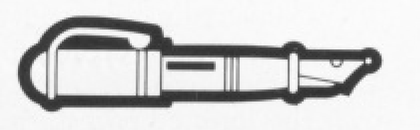
I must write to express my thanks to one of your regular advertisers, Compumart. I purchased a disk drive from them from them in January 1986 and just before the Xmas holiday, almost a year later, the drive failed. I took it to my local computer shop for preliminary examination to be told it was not worth repairing. That was the morning of 22nd December so I thought it was goodbye to computing until well into the New Year, however I phoned Compumart to tell them and check the procedure under the, nearly elapsed, guarantee.

They were very helpful and said if I was prepared to send a cheque for £5 for Securicor delivery and return my old unit they would send me a new one to arrive next day before they closed down for Christmas. The new unit arrived at 11.00 a.m. on the following day before they could possibly have received my cheque, let alone the old unit!

I thought I would let you know as it was through PAGE 6 that I knew about this firm and maybe you could give them a mention they certainly deserve.

William Hadley
Studley, Warks

Alright we give in! Every other magazine has printed a letter saying how good Compumart are so we might as well join in! Seriously though, that is what you call good service. If the Post Office were half as efficient Compumart probably wouldn't even have had to charge you for the delivery!



GRAPHIC SHOP

ANTIC Publications

$19.95

reviewed by Alan Goldsbro

After months of struggling with Print Shop's Graphic Editor, I viewed the prospect of an easier way to produce high quality Icons with some relish. When I read of such a program in Antic, to convert Micro Illustrator and Micro Painter files into Print Shop format, I just had to obtain it with all possible haste and immediately ordered it from Software Express International of Birmingham.

From taking apart the packaging and booting up the disk it takes only seconds to give a screen display similar to Print Shop. This is not surprising as the whole program is based on Print Shop's user friendly operation.

FOUR OPTIONS

Menu driven, the program has four options,

Load Micro Illustrator
Load Micro Painter/Computereyes
View Directory
Format Graphics Disk

To load either Illustrator or Painter files, type in the file name and press return to display the picture on the screen. Toggle from Convert Whole Screen to Convert Part Screen via the space bar.

WHOLE SCREEN

If you wish to convert the whole screen, the picture is compressed into a 600 byte Print Shop Icon. This takes approximately 1 minute or less depending upon the depth of detail in the picture. Once compressed, your icon is displayed in all four corners of the screen, each one in a different shading pattern. Pressing the space bar rotates these icons showing the detail in either black, white or pattern fill. You may at this time return to the previous screen or main menu. Select the pattern of your choice and type in your filename, Graphic Shop checks to see whether there are any duplicates before writing to disk. If there is an existing filename you get the option to re-enter a new filename or replace the existing file.

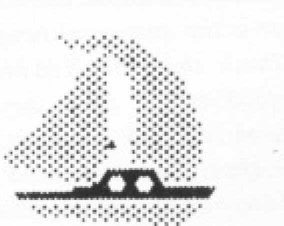
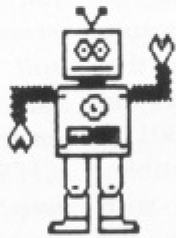
The detail of the compressed pictures can be somewhat lost in the compressing and only pictures with a small amount of detail are worthwhile compressing. I had to touch up the 'new icons' using Print Shop's Graphic Editor almost every time, however it still is easier than using Graphic Shop alone.

SMALL SCREEN

Converting only a portion of the screen takes much less time to do and gives a better imaged icon. Using your joystick, move the FLASHING frame over the selected part of the picture and press the joystick button to start the process. The frame is a set size approximately one twentieth of the screen and cannot be altered. Again you get the option to preview the icon and return to the previous picture or menu before saving.

VIEW DIRECTORY

Whilst all this reading and writing to the disk is in operation, it is worth remembering that you need a separate disk for the icons. The program is directory smart so it knows whether it's a DOS disk or Print Shop disk. Graphic Shop will read either type of disk and list it to the screen.


FORMAT GRAPHICS DISK

Graphic Shop has the ability to format your disks acceptable to Print Shop.

CONCLUSIONS

In general I liked Graphic Shop, it's ease of use, no frills, no nonsense approach is commendable. I did come across one or two problems, one being the program locked up everything when it tried to convert a whole screen with only a small amount of detail on it. This wasn't just a one-off as it happened on more than one occasion. Sometimes it wouldn't load in picture files properly, it came up with garbage on the screen. Worst of all though it gave two different file names to the same picture. I've still got an unlabelled icon lost somewhere on my files and once or twice it saved an icon but on attempting to load it through Print Shop, the message 'Drive Error' was displayed. So far only 75% of my files/icons were fully supported by Graphic Shop. Whether I bought a faulty copy remains to be seen but an attempt to discuss this with a representative of ANTIC (the publishers of the disk) at the recent Atari Show only resulted in the cold shoulder, so maybe they are all the same.

Priced in this country at £19-95 (a £ for $ conversion) I feel that Graphic Shop may not be a good buy unless you use Print Shop regularly and have access to or compose your own picture files. On the other hand if, like me, you are hooked on Print Shop then I'm sure it will fit into your collection with ease. If it were marketed at £9-95 then I am sure it would have a wider appeal.

SOLID MODELLING

by Philip Robinson

Many home computer packages exist that enable the user to draw 3-D images on the screen, however these are usually only simple 'wire-frame' drawings and do not provide much realism. Solid Modelling will enable the user to draw solid 3-D images with correct shading according to a given light source and also provide a variety of surface textures. The images are drawn by combining basic shapes (or portions of them) into the shape required. The technique of combining basic shapes makes the construction of complex objects extremely easy and quick without the need for the user to have any great artistic ability. The program also provides for the storage of the drawings on disk.

DRAWING WITH SOLID MODELLING

The whole screen is used for drawing and is in Graphics 8 Mode to provide the highest possible resolution (320×192). Very few on screen prompts are given while a drawing is being developed. This is done so that the drawing can be as large as possible and it also enables an experienced user to develop the drawing very quickly.

BASIC SHAPES

The shapes available in SOLID MODELLING are shown in the accompanying chart. By using only parts of the basic shapes (clipping) quite complex drawings can be made. The following steps are required to draw a basic shape (or part of it).

1. Press the key that denotes the required shape e.g. 'S' for Sphere. A small single pixel cursor will appear which can be moved around the screen by the joystick.

2. Select the necessary number of points to define the required shape by pressing the joystick fire button when the cursor is in the required position on the screen. A short beep will indicate the point has been selected. The Sphere, Cylinder and Inside-View Toroid require two points to define them, while the Top-View and Edge-View Toroids require three. Refer to the 'Shapes Chart' for details. The cursor will disappear when all the required points have been selected.

3) This step is optional and allows the shape to be 'clipped' so that only a portion of it is drawn. It is important to understand that clipping is relative to the centre of the shape (always the second selected point). A shape can be clipped in up to four directions, right of centre, left of centre, above centre or below centre. When a shape is clipped only the part of the shape from the centre to 'clip-line' will be drawn. The clip-line for right and left of centre is a vertical line drawn through the 'clip-point' (see below), while the clip-line for above and below of centre is a horizontal line drawn through clip-point. For each direction of clipping define a clip-point as follows:

a) Press the appropriate 'arrow' key for the direction required, e.g. Right Arrow for clipping right of centre. The cursor will then appear.

b) Move the cursor (joystick) to the required screen position and then select (fire button) the clip-point. A short beep will indicate the clip-point has been selected. N.B. The clip-point will not be displayed.

4. When the shape has been defined and optionally clipped the 'D' key must be pressed to actually draw the shape.

SPECIAL CURSOR POSITIONING

The 'X' and 'Y' keys provide a cursor control function which is extremely useful for positioning basic shapes relative to each other. They can be used during selection of the points to define a shape. When either of these keys is pressed the cursor will move halfway between its current position and the last selected point. If the 'X' key is pressed the adjustment of the cursor occurs on the X axis, and similarly on the Y axis if the 'Y' key is used. For example, if you required to draw a sphere between two vertical cylinders but with the sphere touching each cylinder this could be done as follows.

Select the first point required to define the sphere by positioning the cursor on the edge of the first cylinder. Move the cursor to the edge of the second cylinder and then press the 'X' key. The cursor will now be at the centre of the required sphere. Select this point and then press 'D' to draw the sphere. Many other similar uses can be found for these two keys.

GENERAL CONTROL KEYS

The functions of the drawing program are selected by the pressing of the appropriate keys (e.g. 'S' to draw a sphere). These keys will immediately take effect. A short beep signals the pressing of a control key. If any error occurs during program operation a longer low buzz will sound. Sometimes screen prompts will occur and these must be responded to before any other function can be started. The control keys that determine the lighting and shading textures must be set prior to pressing 'D' to draw the shape.

SOLID MODELLING ON DISK

Disk subscribers will find a slightly modified version of Solid Modelling on their issue disk. This loads two title screens as the program is initialising which give superb examples of what can be achieved. The disk also contains four example drawings.

Issue 26 disk is also available separately if required at £3.95.

SHAPE CONTROL KEYS

One of the following keys must be selected before a shape can be drawn.

T – Top-View Toroid
S – Sphere
C – Cylinder (Vertical Axis)
O – Cylinder (Horizontal Axis)
E – Edge-View Toroid (Vertical Axis)
M – Edge-View Toroid (Horizontal Axis)
I – Inside-View Toroid (Vertical Axis)
H – Inside-View Toroid (Horizontal Axis)

OTHER CONTROL KEYS

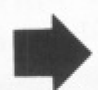
Lighting

1 – One light source.
2 – Two light sources i.e. shadows not so harsh.
3 – 3-D effect removed by direct light from front, however strength of light source (shade) may be specified. The shade value can be from 0 (white) to 64 (black).

Texture

N – Normal half-tone
R – Random

LISTINGS OVERLEAF



Writing on the Drawing / Fast Cursor

W – Enables text to be written to the drawing. The cursor appears and should be moved (joystick) to the required position and then selected (fire button). A prompt for up to 20 characters of text will then appear and the text will be written to the screen. It will be noted that the cursor moves a character at a time and is therefore much faster. This key can therefore be used as a fast cursor option provided the fire button is not pressed prior to the next required control key.

Saving and loading

A – Alters the current filename to be used for filing and retrieving drawings. A prompt for the new file name will appear and this will then be used for any file or retrieval request. Remember to put the drive identifier and colon ":" in front of the file name you require.

F – File the drawing on the screen onto disk using the current filename (see 'A' above).

G – Get the drawing from diskette onto the screen using the current filename (see 'A' above).

Erasing

Q – Quit the current drawing, i.e. erase the screen. A prompt will appear to check that you are sure! If you only require to erase part of the drawing this can be done by drawing over the unwanted part with a 'black' shape.

SHAPES CHART

T – Top-view Toroid

E – Edge-view Toroid

M – Edge-view Toroid

S – Sphere

C – Cylinder

O – Cylinder

I – Inside-view Toroid

H – Inside-view Toroid

A ≤ B

A ≤ B

Note: When the above two shapes are drawn either vertically or horizontally the above relationships must hold. If not the error buzz will sound when an attempt to draw ('D' key) is made.

Notes:
i) 1, 2, 3 indicate the order in which the points must be selected.
ii) When several choices are available for point 1 or 3 only one of the choices should be selected.



```
EI 1 REM ********************************
EY 2 REM *  SOLID MODELLING ASSEMBLY    *
FV 3 REM *           LOADER             *
EB 4 REM * ---------------------------- *
IY 5 REM *  PAGE 6 MAGAZINE - ENGLAND   *
EN 6 REM ********************************
ZP 9 REM _____ LOADER ROUTINE FROM _____
              ANALOG MAGAZINE
FJ 10 TRAP 20:? CHR$(125):POKE 710,0:? :?
   "SOLID MODELLING ASSEMBLY LOADER"
EG 15 DATA 0,1,2,3,4,5,6,7,8,9,0,0,0,0,0,
   0,0,10,11,12,13,14,15
OK 20 DIM DAT$(91),HEX(22):FOR X=0 TO 22:
   READ N:HEX(X)=N:NEXT X:LINE=990:RESTOR
   E 1000:TRAP 70:? :? " CHECKING DATA"
QO 25 TOTAL=0:LINE=LINE+10:? "LINE:";LINE
   :READ DAT$:IF LEN(DAT$)<>90 THEN 180
QE 28 DATLIN=PEEK(183)+PEEK(184)*256:IF D
   ATLIN<>LINE THEN 80
LU 30 FOR X=1 TO 89 STEP 2:D1=ASC(DAT$(X,
   X))-48:D2=ASC(DAT$(X+1,X+1))-48:BYTE=H
   EX(D1)*16+HEX(D2)
JN 40 IF PASS=2 THEN PUT #1,BYTE:NEXT X:R
   EAD CHKSUM:GOTO 25
HC 50 TOTAL=TOTAL+BYTE:NEXT X:READ CHKSUM
   :IF TOTAL=CHKSUM THEN 25
OX 60 GOTO 180
WF 70 IF PEEK(195)<>6 THEN 180
BE 75 IF ASS=0 THEN 120
QT 77 ? "ALL DONE":END
EK 80 IF ASS=2 AND LINE=1110 THEN 120
WI 85 IF LINE=1110 THEN LINE=1990:RESTORE
    2000:GOTO 25
AC 90 ? "LINE ";LINE;" MISSING!":CLOSE #1
   :END
LB 120 CLOSE #1
GU 130 IF ASS=0 THEN OPEN #1,8,0,"D:ASSEM
   1.3D":PASS=2:ASS=2:LINE=990:RESTORE 10
   00:TRAP 70:GOTO 150
DI 140 IF ASS=2 THEN OPEN #1,8,0,"D:ASSEM
   2.3D":PASS=2:LINE=1990:RESTORE 2000:TR
   AP 70:GOTO 150
BA 150 ? :? "WRITING FILE":GOTO 25
MT 180 ? "BAD DATA: LINE ";LINE:END
MS 1000 DATA FFFFFC1CBE1EFF550000A5CC1007
   38A900E5CC85CC85CDA900A20846CD90031865
   CC6A66CECAD0F385CF60A900,5837
XN 1010 DATA 8DFC288DFD28A2102E00292E0129
   2EFC282EFD2838ADFC28EDFE28A8ADFD28EDFF
   2890060CFC288DFD28CAD0DB,5760
HS 1020 DATA 2E00292E01290EFC282EFD28B00F
   38ADFE28EDFC28ADFF28EDFD28B008EE0029D0
   03EE012960A208A9008D0229,4634
GB 1030 DATA 8D032985D085D10E02292E0329EE
   0229D003EE032906CC26CD26D026D106CC26CD
   26D026D138A5D0ED0229A8A5,4723
AN 1040 DATA D1ED0329901285D184D0EE0229D0
   03EE0329CAD0C54CD31D38AD0229E9018D0229
   B003CE0329CAD0B16E03296E,5001
LC 1050 DATA 022960ADFC1C8DFE1C4DFD1C2EFF
   1C6A6EFF1C8DFC1CADFE1C8DFD1C60AD052985
   55AD0629855638A9BFED0729,5172
DL 1060 DATA 85546020F41DA9014C141E20F41D
   A9008D0429A260A90B9D4203A9009D48039D49
   03AD04292056E460AD052929,3792
XH 1070 DATA 078D0C29AD07292907 0A0A0A0D0C
   29AABD7F1ECD082910034C0F1E4C071E20DA1D
   4A4ACD082910034C0F1E4C07,2493
SC 1080 DATA 1EAD0B29F010AC0729C884CDA9CC
   85CC200D1D8D0729AD0A29F0034C2D1E4C4F1E
   0008353D020A373F1018252D,3418
WI 1090 DATA 121A272F3139040C333B060E2129
   141C232B161E030B363E0109343C131B262E11
   19242C323A070F3038050D22,1424
TS 1100 DATA 2A171F2020151D00000000000000
   00000000000000000000000000000000000000
   000000000000000000000000,218
BR 2000 DATA FFFFBF1EB923A9008DFF284C211D
   2C1E291012AD2629D0048D08296038A900ED1D
   298D1D29AD1D2985CCA91A85,4244
WK 2010 DATA CD200D1D8D0129A5CE8D0029AD1B
   298DFE2820BF1EAD00298D0829602C2729102D
   AD10294848AD14298D102968,3539
LS 2020 DATA 8D1429AD11294848AD15298D1129
   688D1529AD12294848AD16298D1229688D1629
   201F20A9018D252938AD2129,3225
CE 2030 DATA CD1029907D38AD0229ED11298D19
   29AD0329ED12298D1A2938AD0E29ED10298D05
   29AD0F29E9008D062938AD23,3705
IN 2040 DATA 29CD1429902318AD19296D15298D
   1D29AD1A296D16298D1E2920C71E18AD13296D
   14298D0729205F1E38AD2429,3095
ZW 2050 DATA CD1429902338AD1929ED15298D1D
   29AD1A29ED16298D1E2920C71E38AD1329ED14
   298D0729205F1EAD2529F034,3739
TG 2060 DATA CE252938AD2229CD102990 2818AD
   02296D11298D1929AD03296D12298D1A2918AD
   0E296D10298D0529AD0F2969,3180
CK 2070 DATA 008D06294C6A1F2C2729101EAD12
   298D1629688D1229AD11298D1529688D1129AD
   10298D1429688D102960AD1B,3078
MJ 2080 DATA 2985CC20001D8D2029A5CE8D1F29
   AD112985CC20001D38AD1F29E5CE8D1F29AD20
   29E5CF8D2029AD152985CC20,4315
AV 2090 DATA 001D38AD1F29E5CE85CCAD2029E5
   CF85CD300A20761D0E02292E032960A9008D02
   298D03296068A9008D11298D,3849
XD 2100 DATA 12298D1629AD1B298D1429AD2D29
   8D1029AD14298D152920021FCE102910F8CE14
   2910E760AD322938ED33294A,3525
AJ 2110 DATA 8D30298D1B29186D33298D3129AD
   302985CC20001DA5CE8D2E29A5CF8D2F29A900
   8D2A296068AD1B2985CC2000,3958
MM 2120 DATA 1D06CE26CFA5CE85CCA5CF85CD20
   761D4E03296E0229AD02298D3629A9008D2A29
   8D12298D1629AD1B2985CC20,4217
OX 2130 DATA 001D8D2929A5CE8D2829AD2A298D
   2B2985CC8D10298D112920001D38AD2829E5CE
   85CCAD2929E5CF85CD20761D,4411
CF 2140 DATA AD02298D2C29AD2B298D14298D15
   29A9008D272920021FA9808D272920021FAD2B
   29CD2C29F006EE2B294C3521,3419
DY 2150 DATA AD2A29CD3629F006EE2A294C0C21
   606820A020A9008D12298D1629AD2A298D1029
   6D112985CC20001D38AD2E29,3608
SL 2160 DATA E5CE85CCAD2F29E5CF85CD20761D
   AD02298D2D29186D31298D2C29A9008D2B29AD
   2B298D142985CDAD2D2985CC,4665
DE 2170 DATA 200D1D8D0129A5CE8D0029AD2C29
   8DFE2820BF1EAD00298D152920021FAD2B29CD
   2C29F006EE2B294CA921AD2A,3846
FM 2180 DATA 29CD3029F006EE2A294C77216068
   20A020AD322985CC20001D06CE26CFA5CE85CC
   A5CF85CD20761D4E03296E02,4504
GF 2190 DATA 29AD02298D3629AD2A298D102985
   CC20001D8D3529A5CE8D3429AD322985CC2000
   1D38A5CEED342985CCA5CFED,4550
QK 2200 DATA 352985CD20761DAD02298D2C2938
   AD3329ED2A299023AD332985CC20001D38A5CE
   ED342985CCA5CFED352985CD,4671
LQ 2210 DATA 20761DAD02298D2B294C7C22AD2A
   298D2B29AD2B298D142985CC20001D18A5CE6D
   342985CCA5CF6D352985CD20,4071
VN 2220 DATA 761DAD02298D2D298DFE28AD2A29
   85CDAD312985CC200D1D8D0129A5CE8D002920
   BF1E38AD2A29ED00298D1129,4071
ZP 2230 DATA A900ED01298D1229AD2B2985CDAD
   312985CC200D1D8D0129A5CE8D0029AD2D298D
   FE2820BF1E38AD2B29ED0029,4191
JF 2240 DATA 8D1529A9008D2729ED01298D1629
   20021FA9808D272920021FAD2B29CD2C29F006
   EE2B294C7C22AD2A29CD3629,3629
MP 2250 DATA F006EE2A294C17226068 20A020AD
   2A298D102985CC38A900ED2A298D1129A900E9
   008D122920001D38AD2E29E5,3867
AR 2260 DATA CE85CCAD2F29E5CF85CD20761D38
   AD3129ED02298D2C29A9008D2B29AD2B298D14
   2985CDAD312985CC200D1D8D,4588
CE 2270 DATA 0129A5CE8D0029AD2C298DFE2820
   BF1EAD002938ED2B298D1529AD0129E9008D16
   2920021FAD2B29CD2C29F006,3845
GD 2280 DATA EE2B294C6723AD2A29CD3029F006
   EE2A294C2B2360000000000000000000000000
   000000000000000000000000,1903
```

TYPING IT IN

Because of the combination of BASIC and machine code routines which are read from disk by the Basic listing it is important to type the programs in correctly. Follow these instructions carefully.

1. Type in Listing 1 and SAVE with the filename D:LOADER.3D. This program is not directly used by the main program and is saved just as a precaution.

2. Make sure that you have a formatted disk in drive 1, then RUN the program you have just saved. This will create two additional programs on the disk, ASSEM1.3D and ASSEM2.3D.

3. Type in Listing 2 and SAVE it to the same disk with the filename D:INTRO.3D.

4. Type in Listing 3 and SAVE it to the same disk with the filename D:PROGRAM.3D.

RUNNING THE PROGRAM

1. Boot up the computer using DOS 2.0 or 2.5 and type RUN "D:INTRO.3D".

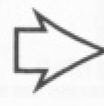
2. When the Ready prompt appears type RUN "D:PROGRAM.3D"

3. If you have any problem, you *must* switch off before running INTRO.3D again.

The program will load the machine code routines from disk and then show 'PROGRAM LOADED' on screen. You are now ready to start.

```
WO 1 REM ******************************
NX 2 REM *      SOLID MODELLING       *
LU 3 REM *            by              *
VE 4 REM *      Philip Robinson       *
SY 5 REM *   INTRODUCTORY LISTING     *
SS 6 REM * -------------------------- *
PC 7 REM *  PAGE 6 MAGAZINE - ENGLAND *
WV 8 REM ******************************
LR 10 PGMSIZ=24:DIM SUBR$(PGMSIZ)
IN 20 FOR I=1 TO PGMSIZ
UW 30 READ BYTE
JZ 40 SUBR$(I)=CHR$(BYTE)
IT 50 NEXT I
EU 60 PROTECT=4096
CX 70 HI=INT(PROTECT/256):LOW=PROTECT-256
   *HI
RL 80 SUBR$(6,6)=CHR$(LOW)
CS 90 SUBR$(14,14)=CHR$(HI)
GD 100 Z=USR(ADR(SUBR$))
NU 110 DATA 24,173,231,2,105,0,141,231,2,
   173,232,2,105,0,141,232,2,169,0,133,8,
   76,0,160
```

```
EI 1 REM ******************************
HV 2 REM *      SOLID MODELLING       *
LR 3 REM *            by              *
PC 4 REM *      Philip Robinson       *
EC 5 REM * -------------------------- *
IZ 6 REM *  PAGE 6 MAGAZINE - ENGLAND *
EO 7 REM ******************************
AY 10 REM
JB 20 GOTO 30600
HY 30 LSEL=0:REM SELECT POINTS WITH JOYST
   ICK
SR 40 LOCATE CX,CY,CV:COLOR 1-CV:PLOT CX,
   CY:FOR I=1 TO 5:NEXT I:COLOR CV:PLOT C
   X,CY
HL 50 IF PEEK(764)<>255 THEN 160
ND 60 IF STRIG(0)=0 THEN GOSUB 700:GOTO 1
   20
OG 70 I=STICK(0):IF I=15 THEN 40
GW 80 IF I=7 THEN IF CX<XM THEN CX=CX+INC
   :GOTO 40
JB 90 IF I=11 THEN IF CX>0 THEN CX=CX-INC
   :GOTO 40
UT 100 IF I=14 THEN IF CY>0 THEN CY=CY-IN
   C:GOTO 40
DP 110 IF I=13 THEN IF CY<YM THEN CY=CY+I
   NC:GOTO 40
QX 115 GOTO 40
EZ 120 LSEL=LSEL+1:X(LSEL)=CX:Y(LSEL)=YM-
   CY:PSEL=PSEL-1
JR 130 COLOR 1-CV:PLOT CX,CY:IF LSEL=2 TH
   EN GOSUB 300
UD 140 IF PSEL=0 THEN SPF=0:RETURN
QQ 150 GOTO 40
YN 160 I=PEEK(764):IF I<>22 AND I<>43 THE
   N SPF=1:GOTO 210
WS 170 IF LSEL=0 THEN 200
RI 180 IF I=22 THEN CX=CX+INT((X(LSEL)-CX
   )/2)
GI 190 IF I=43 THEN CY=CY+INT(((YM-Y(LSEL
   ))-CY)/2)
WY 200 POKE 764,255:GOTO 40
IF 210 IF LSEL=0 THEN RETURN
YW 220 FOR I=1 TO LSEL:LOCATE X(I),YM-Y(I
   ),CV:COLOR 1-CV
SP 230 PLOT X(I),YM-Y(I):NEXT I
II 240 LSEL=0:RETURN
IT 300 REM AUTO CLIP
OG 310 POKE CLIPU,YM-Y(2)
ZN 320 POKE CLIPD,Y(2)
TD 330 IF X(2)>255 THEN 380
DJ 340 POKE CLIPL,X(2)
TZ 350 IF XM-X(2)>255 THEN 390
LR 360 POKE CLIPR,XM-X(2)
ZN 370 RETURN
CC 380 POKE CLIPL,255:GOTO 350
HK 390 POKE CLIPR,255:GOTO 370
KA 400 REM MAIN FLOW
WN 410 REM LOOP TILL KEY PRESSED
PG 415 TRAP 760
CW 420 IF PEEK(764)=255 THEN 420
CO 430 REM STORE KEY AND RESET
VB 440 KY=PEEK(764):POKE 764,255
GI 450 REM CHECK FOR S,I,C,H OR O
AV 460 IF KY=62 OR KY=13 OR KY=18 OR KY=5
   7 OR KY=8 THEN GOSUB 700:GOSUB 210:PSE
   L=2:KYST=KY:GOSUB 30:GOTO 400
IW 470 REM CHECK FOR T,E OR M
VX 480 IF KY=45 OR KY=42 OR KY=37 THEN GO
   SUB 700:GOSUB 210:PSEL=3:KYST=KY:GOSUB
    30:GOTO 400
HT 490 REM CHECK FOR -,=,+, OR *
YU 500 IF KY=14 OR KY=15 OR KY=7 OR KY=6
   THEN GOSUB 700:KYST2=KY:GOTO 650
KT 510 REM CHECK FOR Q,3,N,R,1 OR 2
OT 520 IF KY=47 THEN GOSUB 700:GOTO 4000
MV 530 IF KY=26 THEN GOSUB 700:GOSUB 3000
   :GOSUB 3110:GOSUB 3150:GOSUB 3020:GOTO
    400
ZA 540 IF KY=35 THEN POKE HTORRN,1:GOSUB
   700:GOTO 400
WA 550 IF KY=40 THEN POKE HTORRN,0:GOSUB
   700:GOTO 400
ZR 560 IF KY=31 THEN POKE BAKLIT,0:GOSUB
   700:GOSUB 3170:GOTO 400
AM 570 IF KY=30 THEN POKE BAKLIT,1:GOSUB
   700:GOSUB 3170:GOTO 400
PY 571 REM CHECK FOR A,F OR G
TD 572 IF KY=63 THEN GOSUB 700:GOSUB 3000
   :? "ENTER FILENAME ";:INPUT FN$:GOSUB
   3020:POKE 764,255:GOTO 400
GX 573 IF KY=56 THEN GOSUB 700:IN408=8:GO
   SUB 2000:GOTO 400
ZT 574 IF KY=61 THEN GOSUB 700:IN408=4:GO
   SUB 2000:GOTO 400
FR 575 REM CHECK FOR W
KA 576 IF KY=46 THEN GOSUB 700:GOSUB 4500
   :GOTO 400
RH 580 REM CHECK FOR D
WK 590 IF KY=58 THEN 620
YF 600 REM IGNORE ALL REST
MR 610 GOTO 400
QK 620 REM CHECK ALL SELECTED FOR DRAWING
FK 630 IF SPF=1 THEN GOSUB 730:GOTO 400
VF 640 GOSUB 1000:GOTO 400
FY 650 REM CHECK SELECTED FOR CLIP
FQ 660 IF SPF=1 THEN GOSUB 730:GOTO 400
DJ 670 GOSUB 800:GOTO 400
JW 700 REM BEEP OK
FL 710 SOUND 1,30,10,8:FOR S=1 TO 50:NEXT
    S
QB 720 GOTO 750
LQ 730 REM BEEP ERROR
EL 740 SOUND 1,50,6,8:FOR S=1 TO 150:NEXT
    S
RY 750 SOUND 1,0,0,0:RETURN
JU 760 GOSUB 3020:GOSUB 730:CLOSE #3:GOTO
    400
QV 800 REM CLIP
OA 810 PSEL=1:GOSUB 40
OR 820 IF SPF=1 THEN SPF=0:RETURN
RD 830 CU=YM-CY-Y(2):CD=Y(2)-YM+CY:CL=X(2
   )-CX:CR=CX-X(2)
JE 840 IF KYST2=14 THEN IF CU>=0 AND CU<2
   56 THEN POKE CLIPU,CU:GOTO 890
YC 850 IF KYST2=15 THEN IF CD>=0 AND CD<2
   56 THEN POKE CLIPD,CD:GOTO 890
BF 860 IF KYST2=6 THEN IF CL>=0 AND CL<25
   6 THEN POKE CLIPL,CL:GOTO 890
PT 870 IF KYST2=7 THEN IF CR>=0 AND CR<25
   6 THEN POKE CLIPR,CR:GOTO 890
II 880 GOSUB 730:GOTO 900
ZG 890 REM NO ERROR
OL 900 LOCATE X(LSEL),YM-Y(LSEL),CV:COLOR
    1-CV:PLOT X(LSEL),YM-Y(LSEL)
UB 910 LSEL=LSEL-1:RETURN
QK 1000 REM DRAWING ROUTINE
ND 1005 GOSUB 700:GOSUB 210:REM ASSUME OK
AN 1010 IF KYST=62 THEN PRD=INT(SQR((X(1)
   -X(2))^2+(Y(1)-Y(2))^2)):GOTO 1055
WO 1020 IF KYST=45 THEN PRI=INT(SQR((X(3)
   -X(2))^2+(Y(3)-Y(2))^2)):PRO=INT(SQR((
   X(1)-X(2))^2+(Y(1)-Y(2))^2)):GOTO 1055
```





```
QQ 1030 IF KYST=42 THEN PRO=ABS(X(1)-X(2)
   ):PRI=(PRO-2*ABS(Y(3)-Y(2))):GOTO 1055
RD 1031 IF KYST=37 THEN PRO=ABS(Y(1)-Y(2)
   ):PRI=(PRO-2*ABS(X(3)-X(2))):GOTO 1055
VU 1040 IF KYST=13 THEN PRO=ABS(X(1)-X(2)
   )+ABS(Y(1)-Y(2)):PRI=(PRO-2*ABS(Y(1)-Y
   (2))):GOTO 1055
TP 1041 IF KYST=57 THEN PRO=ABS(Y(1)-Y(2)
   )+ABS(X(1)-X(2)):PRI=(PRO-2*ABS(X(1)-X
   (2))):GOTO 1055
TE 1050 IF KYST=18 THEN PHLEN=ABS(Y(1)-Y(
   2)):PRD=ABS(X(1)-X(2))
SC 1051 IF KYST=8 THEN PHLEN=ABS(X(1)-X(2
   )):PRD=ABS(Y(1)-Y(2))
CS 1055 POKE HVFLAG,128:IF KYST=57 OR KYS
   T=8 OR KYST=37 THEN POKE HVFLAG,0
AB 1060 REM NOW CHECK VALUES
OQ 1070 IF PRI>=PRO THEN 1230
JN 1080 IF PRD>255 THEN 1230
KG 1090 IF PHLEN>255 THEN 1230
UU 1100 IF PRI>255 OR PRI<0 THEN 1230
CN 1110 IF PRO>255 OR PRO<0 THEN 1230
AZ 1120 REM PASS VALUES TO ASSEMBLER
GA 1130 POKE XCENT+1,INT(X(2)/256)
WG 1140 POKE XCENT,X(2)-256*INT(X(2)/256)
   :POKE YCENT,Y(2)
OM 1150 POKE RD,PRD:POKE HLEN,PHLEN
NR 1160 POKE RI,PRI:POKE RO,PRO
OJ 1170 REM CALL ROUTINES
GY 1180 IF KYST=62 THEN A=USR(SPH):RETURN
JI 1190 IF KYST=45 THEN A=USR(TOPT):RETUR
   N
FO 1200 IF KYST=42 OR KYST=37 THEN A=USR(
   EDGT):RETURN
ZY 1210 IF KYST=13 OR KYST=57 THEN A=USR(
   SPL):RETURN
JJ 1220 IF KYST=18 OR KYST=8 THEN A=USR(C
   YL):RETURN
TB 1230 REM INVALID VALUE
LO 1240 GOSUB 730:PRI=0:PRO=1
DI 1250 PRD=0:PHLEN=0:GOSUB 210:RETURN
AA 2000 REM FILE/GET SCREEN
GN 2005 RESTORE
IX 2010 FOR J=1536 TO 1558:READ A:POKE J,
   A:NEXT J
IK 2020 OPEN #3,IN408,0,FN$
ND 2030 TVAT=PEEK(560)+PEEK(561)*256
SH 2040 RAMTOP=PEEK(106)*256
UN 2050 TVSIZ=RAMTOP-TVAT
KC 2060 SIZHI=INT(TVSIZ/256).
OK 2070 SIZLO=INT(TVSIZ-256*SIZHI)
BH 2080 TVAHI=INT(TVAT/256)
DA 2090 TVALO=INT(TVAT-256*TVAHI)
JG 2100 POKE 884,TVALO
CS 2110 POKE 885,TVAHI
TG 2120 POKE 888,SIZLO
MS 2130 POKE 889,SIZHI
QV 2140 A=USR(1536,IN408+3):CLOSE #3
AR 2150 RETURN
OS 2160 DATA 104,201,1,208,10,104,104,141
   ,114,3,162,48,32,86,228,133,213,169,0,
   133,212,96,0
JL 3000 REM SETUP TEXT WINDOW
BM 3010 GRAPHICS 40:? :? :? :? :RETURN
BF 3020 REM REMOVE TEXT WINDOW
PZ 3030 GRAPHICS 56:SETCOLOR 2,0,0:SETCOL
   OR 1,0,15:RETURN
DQ 3040 REM CLEAR SCREEN/SET CURSOR
VA 3050 GRAPHICS 24:SETCOLOR 2,0,0:SETCOL
   OR 1,0,15
ZN 3060 CX=INT(XM/2):CY=INT(YM/2):RETURN
DR 3070 REM ASK/CHECK Y/N
RY 3080 ? :? :? :? :? Q$;:INPUT A$
FU 3090 IF A$<>"Y" AND A$<>"N" THEN GOSUB
   730:GOTO 3080
BH 3100 POKE 764,255:RETURN
SE 3110 REM GET SHADE VALUE
DZ 3120 ? :? :? :? :? "ENTER SHADE, 0-WHI
   TE TO 64-BLACK ";:INPUT PVALUE
QP 3130 IF PVALUE<0 OR PVALUE>64 THEN GOS
   UB 730:GOTO 3120
RR 3140 POKE VALUE+1,0:POKE VALUE,PVALUE:
   POKE 764,255:RETURN
IO 3150 REM SET UNIFORM SHADING(CURVES)
LB 3160 POKE 7879,96:RETURN
EH 3170 REM SET NORMAL SHADING(CURVES)
GX 3180 POKE 7879,44:RETURN
FZ 4000 REM Q PRESSED
FN 4010 GOSUB 3000:Q$="ARE YOU SURE (Y/N)
   ":GOSUB 3070
OS 4020 IF A$="Y" THEN GOSUB 3040:GOTO 40
   40
YV 4030 GOSUB 3020
WF 4040 POKE 764,255:GOTO 400
IR 4500 REM W PRESSED
TC 4510 CX=INT(CX/8)*8:CY=INT(CY/8)*8
GQ 4520 XM=XM-8:YM=YM-8:INC=8
TX 4530 PSEL=1:GOSUB 30:GOSUB 210:XM=XM+8
   :YM=YM+8:INC=1
DF 4540 IF SPF=1 THEN RETURN
FB 4550 GOSUB 3000:? "TEXT(UPTO 20) ";:IN
   PUT Q$:GOSUB 3020
LE 4560 SCRN=PEEK(88)+256*PEEK(89):DIS=(C
   X/8)+CY*40
RL 4570 LCN=SCRN+DIS:IF DIS+LEN(Q$)>7400
   THEN GOSUB 730:RETURN
AV 4580 FOR CHAR=1 TO LEN(Q$)
AR 4590 A$=Q$(CHAR,CHAR):V=ASC(A$)
ZN 4600 IF V>127 THEN V=V-128
KG 4610 IF V>31 AND V<96 THEN V=V-32:GOTO
   4630
WH 4620 IF V<32 THEN V=V+64
OP 4630 CL=57344+V*8
XH 4640 FOR BYTE=0 TO 7
WL 4650 POKE LCN+BYTE*40,PEEK(CL+BYTE)
TD 4660 NEXT BYTE
OF 4670 LCN=LCN+1
JL 4680 NEXT CHAR
BP 4690 RETURN
WF 5000 REM LOAD OBJ FILES
RI 5010 TRAP 5090
RC 5020 OPEN #3,4,0,FN$:GET #3,V:GET #3,V
IL 5030 GET #3,V:GET #3,W:ADSTART=256*W+V
AO 5040 GET #3,V:GET #3,W:ADEND=256*W+V
HA 5050 ADCUR=ADSTART
PV 5060 GET #3,V:POKE ADCUR,V:ADCUR=ADCUR
   +1
ZC 5070 IF ADCUR<=ADEND THEN 5060
QV 5080 GOTO 5030
FG 5090 CLOSE #3:RETURN
EU 30000 REM SETUP PARAMETER ADDRESSES AN
   D DEFAULTS
CD 30005 VALUE=10504
YD 30010 HTORRN=VALUE+2:POKE HTORRN,1
FU 30020 NOSCAL=HTORRN+1:POKE NOSCAL,0
XS 30030 XCENT=NOSCAL+3:POKE XCENT,160:PO
   KE XCENT+1,0
ED 30040 YCENT=XCENT+5:POKE YCENT,96
AA 30050 RD=YCENT+8:POKE RD,50
LD 30060 CLIPL=RD+6:POKE CLIPL,255
RM 30070 CLIPR=CLIPL+1:POKE CLIPR,255
AH 30080 CLIPU=CLIPR+1:POKE CLIPU,255
BP 30090 CLIPD=CLIPU+1:POKE CLIPD,255
LM 30100 BAKLIT=CLIPD+2:POKE BAKLIT,0
RN 30110 HVFLAG=BAKLIT+1:POKE HVFLAG,128
UW 30120 HLEN=HVFLAG+6:POKE HLEN,60
KA 30130 RO=HLEN+5:POKE RO,40
CX 30140 RI=RO+1:POKE RI,20
EA 30160 RETURN
OO 30500 REM SETUP ROUTINE ENTRY POINTS
YN 30510 CYL=8308
CU 30520 SPH=8397
JX 30530 EDGT=8555
YL 30540 TOPT=8688
IM 30550 SPL=8999
EM 30560 RETURN
HB 30600 REM SETUP
YO 30610 GOSUB 30000:GOSUB 30500
AJ 30620 DIM X(4),Y(4),FN$(17),Q$(20),A$(
   1)
RE 30630 YM=191:XM=319:SPF=1:PRO=1:INC=1:
   POKE 764,255:GOSUB 3040
MG 30700 REM DISPLAY TITLE
KN 30720 REM LOAD ASSEMBLER
FL 30730 FN$="D:ASSEM1.3D":GOSUB 5000
GI 30740 FN$="D:ASSEM2.3D":GOSUB 5000
DJ 31000 REM DISPLAY LOADED MSG THEN ERAS
   E IT
TN 31010 GOSUB 3040:CX=104:CY=96
IT 31020 Q$="PROGRAM LOADED":GOSUB 4560
DZ 31030 FOR I=1 TO 100:NEXT I
NV 31040 GOSUB 3040:FN$="ZZZZZ":GOTO 400
```

Tales of Imagination

John Sweeney looks at Infocom's latest while our regular columnist Garry Francis takes a break

LEATHER GODDESSES OF PHOBOS
TRINITY
MOONMIST
All from INFOCOM on diskette
Prices around £25 on 8-bit and £30 on ST

Infocom continue to produce an unrelenting flow of superb text adventures, or as they call them 'Interactive Fiction'. After the arduous Spellbreaker and the entertaining Ballyhoo in the first half of 1986, they released Trinity (ST only) in September, The Leather Goddesses of Phobos in October, and Moonmist in November. All of the games have the unmistakable stamp of Infocom quality, even down to the packaging (the Leather Goddesses actually includes a 3-D Comic with 3-D glasses and a Scratch 'n' Sniff sheet!).

WHAT IS AN INFOCOM?

Just in case anyone out there hasn't had a chance to try an Infocom adventure, let me try briefly to explain some of their features. As I said, the quality starts with the packaging, this always includes a few novelties which may or may not contain clues to the adventure. It also contains a comprehensive instruction manual, which not only provides an introduction to the adventure and a description of the types of sentences which the program can understand, but also some tips for novices on how to enjoy and solve adventures, and a sample transcript and map of part of an adventure, so that, even if you have never played anything like this before, you can very quickly get a good understanding of what it is all about. Even experienced adventurers can benefit from reading the sample transcript, as it nearly always contains some ideas which are relevant to the adventure!

The quality continues into the playing. Since it is primarily a game, and games are supposed to be fun, Infocom take care to ensure that all their games have a liberal sprinkling of humour. It is very rare that you won't get a few laughs out of every session. The other aspect of the fun in an Infocom game is that you can type in virtually anything which is relevant to the game and follows the syntactical rules described in the manual, and you will get a sensible answer. The vocabulary is always enormous and the ability to understand different ways of saying things is excellent. One of the best aspects of Infocom is that they are fairly exhaustive in thinking of all the things that you might try and do and supplying responses to them – often in a humorous or misleading way!

As you play an Infocom Interactive Novel the story unfolds around you, confronting you with puzzles at every turn. Any frustration you experience will normally be due to your own limitations rather than the program's! Infocom are usually reasonably fair as well in that the problems you will meet will normally have logical solutions and they do try to provide clues to most of them somewhere in the game.

So, if you have been frustrated in the past with other adventures where you knew exactly what you wanted to try but you couldn't guess the right words to tell the program what you wanted to do, try an Infocom – if IT doesn't understand you then you are trying the wrong thing.

So to the individual games.

MOONMIST

Moonmist is an Introductory level Mystery, written by Stu Galley and Jim Lawrence who wrote Witness and Seastalker. This is Infocom's third Introductory story "written for everyone from age 9 up". I believe it is their best attempt yet at producing an adventure which a young child can play and enjoy easily. As usual with their Introductory games they provide a map of most of the locations – in this case the rooms of an old Cornish Castle. Movement is made very easy since the program will accept commands such as 'GO TO DRAWING ROOM', and a lot of redundant commands are eliminated, e.g. if you are outside a secret door and you have found the lever then a simple directional command such as 'E' will work – the program will automatically pull the lever and open the door for you.

The game starts with you outside Tresyllian Castle. Once you have solved the first problem (or even if you haven't – it is Introductory level after all!) the butler will ask you for your name and title. Your response to this will determine your sex for the rest of the game – the various characters will address you appropriately by name and title. Your friend Tamara will then welcome you to the castle and introduce you to the other guests. She is the fiancee of the Lord of the Castle and is rather worried by the attempts on her life that have taken place recently, especially since the Lord's previous fiancee, Deirdre, is missing believed dead! The legendary Ghost of the White Lady has been seen around the castle lately, and over dinner you discover that there is a treasure hidden somewhere in the castle as well.

So there is plenty for you to do! Apart from exploring the parts of the castle not shown on the map and searching for the secret passages hinted at in the brochure, you must follow a trail of clues to find the treasure, unmask whoever has been threatening Tamara, and discover who or what the Ghost is. There are seven other people in the castle, not to

mention the butler and the maid, and is Deirdre really dead – her body was never discovered?

The game gives plenty of help along the way and none of it is particularly hard, so experienced adventurers should find it fairly easy but nonetheless very enjoyable. However, once you have finished you are only a quarter of the way through the game! There are actually four different scenarios – each one involving a different treasure, villain and ghost! You determine which variation you are playing by telling the butler what your favourite colour is at the beginning of the game. Although the variations follow fairly similar patterns, there are enough twists to keep you busy for many more hours. All in all an excellent introduction to the art of adventuring.

THE LEATHER GODDESSES OF PHOBOS

The Leather Goddesses is intended for a rather different audience! It is a Standard Level Fantasy written by Steve Meretzky who wrote Planetfall, Sorceror, The Hitchhiker's Guide to the Galaxy (with Douglas Adams) and A Mind Forever Voyaging (ST only). With a pedigree like that you can be sure you are in for a treat. The narrative is very much in the style of the pulp magazines of the thirties, and very reminiscent of Edgar Rice Burroughs' 'Princess of Mars'. The game has three modes: Tame, Suggestive, and Lewd! You have to tell it your age if you want to play in Lewd mode!

The game starts in Joe's Bar in Upper Sandusky, Ohio, in 1936. Assuming that you manage to get to the toilet in time, you will visit the Jungles of Venus, the Deserts of Mars, the cold reaches of Outer Space, and the arching towers and curving domes of the notorious Pleasure Palace of the Leather Goddesses of Phobos (do be sure to ask the assassin about them in order to learn the origin of the name). Oh yes, you get to visit Cleveland too!

After determining your sex by visiting the appropriate toilet you are captured as an experimental subject doomed to an unspeakably painful death to help the Leather Goddesses in their efforts to enslave humanity. Naturally you escape. You also rescue another prisoner who has a plan to build a Super Duper Anti-Leather Goddesses Attack machine, if only you can provide a common household blender, six feet of rubber hose, a pair of cotton balls, an 82 degree angle, a headlight from any 1933 Ford, a white mouse, a photo of Douglas Fairbanks or Jean Harlow, and a copy of the Cleveland Phone Book! Simple, eh?

So off you go on an interplanetary scavenger hunt. The situations, problems and puzzles are all up to Infocom's usual standard. The humour is even better than usual, as you would expect if you have played any of Meretzky's other games. And you can have even more fun by comparing the text and responses in the three different modes!

One excellent feature of the game is the maze. When Infocom put a maze in a game they always make it just a little bit different in some way. This one is no exception. It appears at first attempt to be completely insoluble. At second attempt you will probably decide that it really is insoluble, despite the fact that the package actually contains a complete map of it! The fact that you keep being attacked by beetles and crabs doesn't help, but the main problem is the Martian alligators that keep swallowing you! There is of course a solution and you will eventually discover the fabulous treasure stored in the Burial Chamber of the Secret Catacombs – won't you?

The game's finale is truly amazing. Be sure to play it both with and without all eight items – it is completely different! I can thoroughly recommend this to all adventurers everywhere. This is yet another of those marvellous adventures which have been known to finally persuade Atari owners that they really do need a disk drive!

TRINITY

Last, but not least, is Trinity. The bad news, for those of you who have only got eight bits, is that this is an Interactive Fiction Plus. It will not run on an 800XL or 130XE. You will need an ST. The good news, for those of you with nine bits or more, is that it is even better than Infocom's usual standard in richness of vocabulary, responses, text, etc. It is a Standard Level Fantasy written by Brian Moriarty of Wishbringer fame.

It looks like a standard Infocom Interactive Novel in most respects, but they do make slightly more use of the screen's capabilities, for example certain of your actions will cause quotations to appear in a small window in the middle of the screen, and the name of the location you have entered is highlighted so as to stand out better from the masses of text found in all Infocom games.

Trinity was the code name for the first atomic experiments. The game starts at the beginning of World War III. Assuming that you succeed in escaping from the holocaust you will find yourself in a strange land full of strange artifacts and numerous enormous mushrooms. Once you have discovered the secret of the mushrooms and the giant sundial which dominates the landscape you will be able to visit six other times and places at which atomic explosions took place, including, finally, the McDonald Ranch where the very first Atomic Explosion took place.

The problems are as ingenious as ever. I especially enjoyed working out how to survive after stepping through a mushroom door and finding myself either falling from a height of 1400 feet towards Nagasaki, or in orbit around the Earth with no protection!

IN CONCLUSION

None of the Infocom games are perfect, there is always some sentence that you think they should understand, or some problem that you think has a slightly dubious solution (although in hindsight you can't really see why you didn't think of trying it sooner!), but I have yet to find any other adventures which give so much pleasure, both in the experience of playing them and in the satisfaction gained from solving the problems. Infocom now have three Introductory Level, nine Standard Level, six Advanced Level, and four Expert Level Interactive Novels – a total of 22 games. Five of them are Mysteries, nine are Fantasy, five are Science Fiction, and three are Tales of Adventure. I have no hesitation in recommending any of them to anyone interested in an entertaining challenge. I look forward eagerly to their next Interactive Novel, Hollywood Hijinks, in early 1987. •

THE O·S· CONTROLLER CARD

The O.S. Controller Card is a 'state of the art' hardware board which allows you to have two operating systems in your XL/XE Computer. One is the standard Atari O.S., the other is programmable. The product has been designed to:
a) be extremely cost effective as it alleviates the necessity to purchase new Eproms every time you want a new utility (of course that is assuming that someone is even producing an Eprom with the utility that you require).
b) be easy to use – no programming knowledge at all is required to use the O.S. Controller Card.
c) allow enormous flexibility and potential to the point that the user may create a completely new operating system for the computer – even from Basic.
d) be totally compatible with existing software and be easily up-dated if required.

UTILITY DISK #1

This is the first of many utility disks and offers a host of utilities to get you started in the world of O.S. customizing.

1) THE SNAPSHOT PRINTER DUMPER: – at the touch of a button this will accurately reproduce whatever's on your screen to your printer in full A4 size, when the dump is complete your program will continue where you left off. Besides the normal draft quality we have included our unique SHQ™ mode, this is our graphics equivalent of NLQ – has to be seen to be believed. There is also a mode similar to SHQ™ that compensates for printer's with inaccurate line feeds. (Epson & Compatibles)

2) THE DUMPER: – an ideal utility to upgrade all your cassette software to disk or make disk to disk backups. The Dumper is not affected by any cass/disk protection at all! The Dumper can be activated repeatedly throughout your program making it ideal for software that has no save game option.

3) O.S. BOOT MENU: – a multiboot compatible menu that's O.S. resident, simply press the HELP key and you are instantly back at the menu, now either load a new file or press system reset and you are back to the beginning of your previous program.

4) I/O ANALYZER: – While you are loading a boot disk the I/O analyzer will constantly send updated information to the printer about the drive and the computer.

5) There are also such features to change the master O.S. character set, switch on or off auto scroll, noisy I/O, key click, inverse flash, fast cursor, alter the primary colour defaults and lock them, save any pre-XL/XE O.S. with or without customised ROMS.

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The O.S. switch pack is an optional extra that when added to the O.S. Controller Card will give the you following features:-
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2) Switch the board lock on and off. With this switch on, the O.S. Controller Card cannot be re-programmed thus eliminating any accidental tampering with your customised O.S. by other software.
3) Switch between the Atari O.S., the Customised O.S.. and the Permanent Ram O.S. even while your software is running.

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40 More Great Flight Simulator Adventures
Compute! Publications

A Book Review by John S Davison

Yes, folks, he's done it again! Charles Gulick, that legendary Flight Simulator 2 (FS2) explorer pilot has written a sequel to 40 Great Flight Simulator Adventures (as reviewed in Issue 21).

'40 More' follows the same format as its predecessor, in that it's written as if the author is sitting next to you in the aircraft, talking you through each scenario as you fly it. Each adventure is laid out in the same way too, starting with a screen shot taken from the scenario, followed by FS2 editor values you have to key in to set up each flight, and finally the instruction text. Again, as in the original, the text has graphic symbols against it showing at a glance when you have to take over control, or perform a specific action, or look outside for something special.

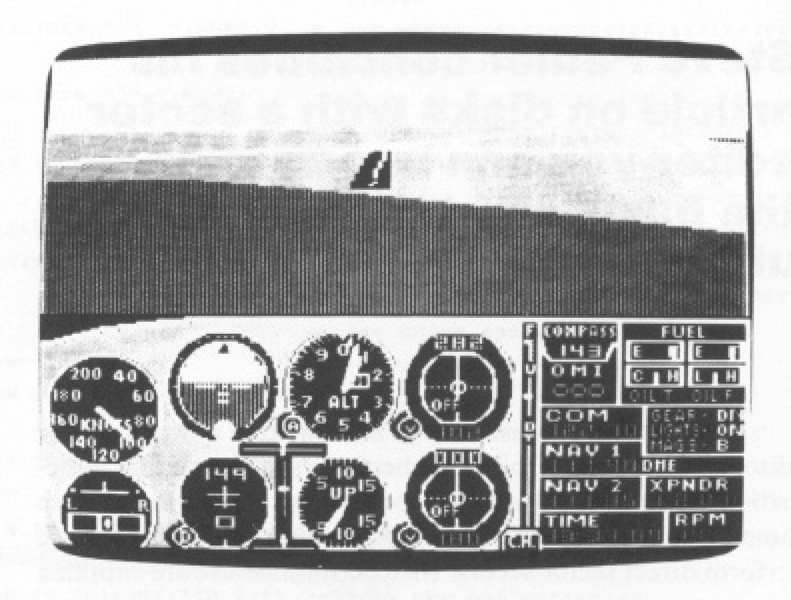
40 More starts with a foreword written by Bruce Artwick, the author of FS2 (again, reviewed in Issue 21). This gives some fascinating background information about the simulator and its development. For instance, did you know it began life in 1979 on an Apple computer as a graphics demonstration? Or that there have been 21 versions in total, which between them have sold over ONE MILLION copies!

Charles Gulick then takes over with a section on how to use the book, tips on flying the scenarios and general instructions on how to save editor values to disk so you can reload them at any time without the hassle of keying them all in again. Then, it's off into the first adventure.

Let me say now that many of these adventures require more advanced flying skills to complete successfully than those in the first book. A number of them are really advanced flying lessons rather than straight exploratory flights or acting out fictional storylines, although there are plenty of these too. For instance, there's a whole series of scenarios concerned with accurate, realistic take-off, airfield circuit pattern, and landing procedures using Spanaway airfield, near Seattle. These use the procedures and controls you'd use in a real light aircraft – the aim is accuracy and realism, to get you flying the simulator as you would the real thing. This is no game, it's deadly serious stuff for the true FS2 aficionado. I found I had to practice for several hours before I could fly touch-and-go circuits of Spanaway in the Gulick approved manner.

For light relief following this, the next scenario has you flying from Chino to San Diego in California, when a snag develops. Your elevators and flaps become unusable, so you have to make the whole flight using only engine power to climb and descend. You have a very strange companion on this flight, who tells you what to do and when, but he vanishes when you're safely on the ground at San Diego! The landing in this scenario is unbelievably stressful – do I really do this for fun and relaxation?

Another series of scenarios makes use of the World War 1 wargame area, but...you're flying in your modern Piper Cherokee Archer rather than the usual WW1 biplane. One of these scenarios has you flying through the open ended hangar



that's a feature of one of these airfields. Another has you exploring strange 'mirror images' of the WW1 area which seem to be scattered about that part of the FS2 world, flying over (into, if you're not careful) the mountains from outside, to enter the former war zone.

One of my favourite scenarios involves flying from Bremerton National in Washington state, along a waterway to the Hood Canal, then following this all the way to Admiralty Inlet on Puget Sound, before landing at Snohomish County airfield.

As in the original book, some scenarios are short, like the engine failure on take off from Fallbrook Airpark in California. Others are very long, like the attempted flight to the North Pole. This one is quite boring, in fact, as there's not much for you to do or see. It's really an experiment to probe the limits of the FS2 world.

Then there are the pure FS2 phenomena exploration flights, like investigating the nature of clouds and looking at strange FS2 scenery bugs. Also, those that push FS2 to the limit of its simulation abilities, like inverted flying, and the fun scenarios, like landing and taking off from Manhattan Bridge in New York!

All scenarios but one use the standard scenery disk supplied with the FS2 program. The odd one uses one of the new accessory disks, covering the Dallas area. I still haven't managed to get my hands on these extra disks yet. Sublogic have begun advertising them in Antic Magazine, so I assume their release in Atari format is imminent.

This book has over 60 pages more than the original, plus reprints of the FS2 navigation charts in the back. It's cheaper than the original at just £8.95. If you're an FS2 enthusiast, you must have at least one of these books. If you're a fanatic like me, you shouldn't be without either. They'll multiply your enjoyment of FS2 many times over, and give you many, many hours of additional pleasure.

Postscript: I recently discovered a way to get even more enjoyment out of FS2 and Charles Gulick's books. This is by using real maps. On a recent trip to Foyle's famous bookshop in London, I discovered a series of tourist maps of different areas of the USA, published by Rand McNally. I've also seen them in Heffers bookshop in Cambridge. These cost under £2 each, and show most of the scenery features appearing in FS2. When Charles Gulick tells you you're flying over Lake Washington, just passing Sand Point, you can actually see from the map that it's for real! These maps aren't as good as proper aviation maps, but they're much cheaper and easier to obtain.

Steve Pedler concludes his article on disks with a sector editor you can use as is or as the basis of your own super utility

DISK SECTOR EDITOR

As I said in the last issue, I have written a simple sector editor and here it is! One of the best ways to put all that information from issue 24 into perspective is to experiment with some of your own disk. This sector editor will allow you to perform direct sector access. Instructions for use are supplied below.

I suggest you experiment with a test disk you don't mind losing until you know how it works. To be safe, the program will not perform any disk write without double checking with you first. Some suggestions for use include examining and changing directory sectors, the VTOC, file link data and so on. Just refer back to issue 24 for guidance.

Feel free to improve the program and add more features such as file tracing and deleted file recovery. Why not send your improved versions to Page 6?

Instructions for use.

Type the program in and check it with TYPO III, then save a copy before running it. The program contains two machine language subroutines and mistakes in these may cause the computer to lock up.

On running the editor, you will first be asked for a sector number. This should be in the range 1 – 720 for a single density disk, and 1 – 1040 for an enhanced density disk. If you enter a sector number greater than the maximum limit the program will give you an error message. However, if you enter zero (remember that sector zero doesn't exist) you will be sent to the disk utilities menu. More about this later.

The editor will then read the sector and display it on the screen. If you entered a directory sector (361 – 368) the sector will be printed in eight rows, each row corresponding to one directory entry. The first five bytes of each entry will appear in decimal form, the rest in ATASCII form so you can read the filename. If the sector was not a directory sector, it will be shown as 16 rows of eight bytes in decimal form. Machine language programmers may like to convert this so that the values appear in hexadecimal. Across the top of the 16 by 8 matrix are the numbers 0 -7, and down the left side the numbers 0 to 120 in steps of eight. This is so that you can calculate the position of any byte in the sector by adding the appropriate row number to the column number.

Under the sector display you will see the prompt 'Command?'. At this point you may press one of four Control-key combinations (there is no need to press Return). These are:

CTRL-R - read another sector. It will send you back to the beginning of the program so that you can view a different sector.
CTRL-W - write this sector to disk. Usually used when you have changed something in the sector. The program will first ask if you are sure you want to do this before writing to the disk. Respond with a 'Y' to confirm, any other key will simply redisplay the same sector.
CTRL-F - display file link data. For any sector other than a directory, VTOC or boot sector (none of which have link data) this command will extract the sector link data from the last three bytes of the sector and display it on the screen. This saves you having to do it manually.
CTRL-C - change the sector. You will be asked for the number of the byte you wish to change, which can be determined by adding the numbers for the row and column the byte is in. The current value of that byte will then be shown, and you will be asked for a new value. The sector will then be redisplayed complete with new value, but note that the change is only in memory. Nothing will be written to the disk until you specifically instruct it. You may make as many changes as you like to a sector and then do just one disk write, which will make all the changes on the disk at the same time.

In order that you can see the effect of the changes you make without going to DOS, I have included a set of the basic disk utilities (read directory, lock and unlock file, and rename or delete file). To access these utilities, enter zero when you are asked for a sector number to read. A short menu will be shown, and you should press one of the number keys 1 – 6 (without Return) corresponding to your choice. Pressing 6 will return you to the main program. All of these utilities will only work with drive 1 as presently written, but this would be easy to change. When asked for a file name, just type the name plus extender (if any). Do not add D: or D1:, the program will do this automatically.

I hope you find this program useful. It is a very simple editor, and there is ample scope for extension and improvement. With a little work this could form the basis of a very useful disk utility.

```
EI 1 REM ********************************
AI 2 REM *  Basic Disk Sector Editor    *
ZG 3 REM *  by S.J. Pedler July 1986    *
EB 4 REM * ---------------------------- *
IY 5 REM *  PAGE 6 MAGAZINE - ENGLAND   *
EN 6 REM ********************************
AY 10 REM
KE 30 GOSUB 170:REM initialize
LQ 40 TRAP 950:? "K":POSITION 2,2:? "Which sector to read";:INPUT SECNUM
FB 50 IF SECNUM<1 THEN GOTO 1000
MN 60 DCOMM=82:GOSUB 300:REM read a sector
WI 70 IF PEEK(771)<>1 THEN ? "Error ";PEEK(771);" occurred!!":GOTO 160
KJ 80 IF SECNUM>360 AND SECNUM<369 THEN DIREC=1:GOSUB 360:GOTO 100:REM Directory sector
BT 90 DIREC=0:GOSUB 490:REM print sector to screen
HL 100 POSITION 2,21:? "Command?";:GET #1,K
GQ 110 IF K=3 THEN GOSUB 610:GOTO 100:REM change the sector
NC 120 IF K=23 THEN GOSUB 690:GOTO 100:REM write it back to disk
UZ 130 IF K=18 THEN GOTO 40:REM read another sector
IZ 140 IF K=6 THEN GOSUB 800:GOTO 100:REM display file link data
LQ 150 GOTO 100
JT 160 ? "Press Return to continue":INPUT ANS$:GOTO 40
BT 170 REM Initialize
HK 180 GRAPHICS 0:POKE 752,1
QB 190 SETCOLOR 2,1,10:SETCOLOR 1,1,0
UC 200 DIM SEC$(128),CLEAR$(128),ANS$(10),NUM$(3),F$(40),FIL$(40)
DJ 210 SEC$(1)=" ":SEC$(128)=" ":SEC$(2)=SEC$
AB 220 CLEAR$(1,128)=SEC$
MZ 230 FOR J=0 TO 4:READ X:POKE 1536+J,X:NEXT J
QM 240 DATA 104,32,83,228,96
ZE 250 FOR J=0 TO 22:READ X:POKE 1600+J,X:NEXT J
LH 260 DATA 104,104,104,141,84,6,41,3,141,85,6,173,84,6,74,74,141,86,6,96,0,0,0
HM 270 BUFFER=ADR(SEC$):BUFHI=INT(BUFFER/256):BUFLO=BUFFER-(BUFHI*256)
PR 280 OPEN #1,4,0,"K:"
ZQ 290 RETURN
CH 300 REM Set up DCB for sector read/write
RP 310 POKE 769,1:POKE 770,DCOMM:POKE 772,BUFLO:POKE 773,BUFHI
YL 320 SECHI=INT(SECNUM/256):SECLO=SECNUM-(SECHI*256)
QL 330 POKE 778,SECLO:POKE 779,SECHI
DB 340 X=USR(1536)
ZJ 350 RETURN
YN 360 REM Print directory sector
PH 370 ? "K":POSITION 2,2:? "Sector ";SECNUM;" (directory sector)"
OH 380 POSITION 0,4:? "Byte  0   1   2   3   4   5-12   13-15"
VH 390 J=0:FOR Y=6 TO 13:POSITION 0,Y:? J:J=J+16:NEXT Y
TA 400 Y=6:FOR BYTE=0 TO 7:POSITION 4,Y+BYTE:FOR J=1 TO 5
ZA 410 NUM$=STR$(ASC(SEC$(BYTE*16+J,BYTE*16+J)))
HL 420 IF LEN(NUM$)=1 THEN ? "  ";NUM$;" ";
BY 430 IF LEN(NUM$)=2 THEN ? " ";NUM$;" ";
KY 440 IF LEN(NUM$)=3 THEN ? NUM$;" ";
GO 450 NEXT J
RW 460 ? SEC$(BYTE*16+6,BYTE*16+13);" ";SEC$(BYTE*16+14,BYTE*16+16)
KO 470 NEXT BYTE
ZQ 480 RETURN
WC 490 REM Print other sector
MP 500 ? "K":POSITION 2,0:? "Sector number ";SECNUM
BT 510 POSITION 0,2:? "Byte  0   1   2   3   4   5   6   7"
BT 520 J=0:FOR Y=4 TO 19:POSITION 0,Y:? J:J=J+8:NEXT Y
RE 530 Y=4:FOR BYTE=0 TO 15:POSITION 4,Y+BYTE:FOR J=1 TO 8
NY 540 NUM$=STR$(ASC(SEC$(BYTE*8+J,BYTE*8+J)))
HS 550 IF LEN(NUM$)=1 THEN ? "  ";NUM$;" ";
CF 560 IF LEN(NUM$)=2 THEN ? " ";NUM$;" ";
LF 570 IF LEN(NUM$)=3 THEN ? NUM$;" ";
GV 580 NEXT J
KT 590 NEXT BYTE
ZC 600 RETURN
TN 610 REM Change sector
LQ 620 POSITION 2,21:? CLEAR$
KV 630 POSITION 2,21:? "Number of byte to change [0-127]";:INPUT BYTENUM:IF BYTENUM<0 OR BYTENUM>127 THEN 620
DY 640 ? "Present value of this byte is ";ASC(SEC$(BYTENUM+1,BYTENUM+1))
TP 650 ? "Input new value";:INPUT OURBYTE:IF OURBYTE<0 OR OURBYTE>255 THEN 650
MW 660 SEC$(BYTENUM+1,BYTENUM+1)=CHR$(OURBYTE)
CX 670 IF DIREC=1 THEN GOSUB 360:RETURN
NK 680 GOSUB 490:RETURN
ZG 690 REM Do disk write
OP 700 ? "K":? "Write this sector to disk - "
ZU 710 ? "are you sure [Y/N]";:INPUT ANS$
SA 720 IF ANS$<>"Y" THEN 780
OR 730 DCOMM=87:REM write with verify
RW 740 GOSUB 300
AK 750 IF PEEK(771)<>1 THEN ? "Error ";PEEK(771);" occurred!!":GOTO 770
FP 760 ? "Sector written!"
GX 770 ? "Press Return to continue";:INPUT ANS$
DA 780 IF DIREC=1 THEN GOSUB 360:RETURN
NN 790 GOSUB 490:RETURN
QB 800 REM Display link file data
RH 810 ? "K"
GJ 820 IF SECNUM>360 AND SECNUM<369 THEN ? "Directory sector - no link data!":GOTO 920
KT 830 IF SECNUM=360 OR SECNUM=1024 THEN ? "VTOC - no link data!":GOTO 920
OW 840 IF SECNUM<4 THEN ? "Boot sector - no link data required!":GOTO 920
ND 850 X=USR(1600,ASC(SEC$(126,126)))
OM 860 IF ASC(SEC$(128,128))=0 THEN ? "No data/program bytes in this sector":GOTO 920
NK 870 POSITION 2,2:? "File number=";PEEK(1622)
KK 880 NEXSEC=ASC(SEC$(127,127))+(PEEK(1621)*256):IF NEXSEC=0 THEN ? :? "Last sector in file":GOTO 900
UZ 890 ? :? "Next sector=";NEXSEC
MM 900 BYCOUNT=ASC(SEC$(128,128))
PJ 910 ? :? "Bytes this sector=";BYCOUNT
KB 920 ? :? "Press Return to continue";:INPUT ANS$
CS 930 IF DIREC=1 THEN GOSUB 360:RETURN
NF 940 GOSUB 490:RETURN
WG 950 REM Error routine
PP 960 TRAP 950
LO 970 ? "K":? "Error ";PEEK(195);" occurred."
HB 980 ? "Press Return to continue";:INPUT ANS$
AC 990 CLOSE #1:RUN
JC 1000 REM DOS utilities
LS 1010 ? "K":POSITION 2,2:? "DOS utility menu"
XV 1020 ? :? "1. Disk directory"
RD 1030 ? "2. Delete file"
SN 1040 ? "3. Rename file"
GW 1050 ? "4. Lock file"
EC 1060 ? "5. Unlock file"
UN 1070 ? "6. Exit this menu"
NF 1080 ? :? :? "Press a key [1-6]":GET #1,K
CO 1090 IF K<49 OR K>54 THEN 1080
AH 1100 K=K-48:ON K GOTO 1110,1160,1210,1260,1300,1330
EE 1110 OPEN #2,7,0,"D:*.*":TRAP 1140
AU 1112 REM The OPEN statement in line 1110 will only work with DOS 2.5.
HZ 1113 REM If you have another version of DOS, change it to: "OPEN #2,6,0,"D:*.*"
ET 1120 INPUT #2,FIL$:? FIL$
OL 1130 GOTO 1120
OK 1140 IF PEEK(195)<>136 THEN 950
OR 1150 CLOSE #2:GOTO 1340
ER 1160 ? "Enter filename";:INPUT FIL$
KR 1170 ? "Delete this file - are you sure [Y/N]";:INPUT ANS$:IF ANS$<>"Y" THEN 1340
JW 1180 F$(3,14)=FIL$:F$(1,2)="D:"
XB 1190 XIO 33,#2,0,0,F$
QC 1200 GOTO 1340
SP 1210 ? "Enter oldname,newname";:INPUT FIL$
KN 1220 ? "Rename this file - are you sure [Y/N]";:INPUT ANS$:IF ANS$<>"Y" THEN 1340
LE 1230 F$(3,27)=FIL$:F$(1,2)="D:"
WD 1240 XIO 32,#2,0,0,F$
QR 1250 GOTO 1340
OH 1260 ? "Enter filename to lock";:INPUT FIL$
JV 1270 F$(3,14)=FIL$:F$(1,2)="D:"
XW 1280 XIO 35,#2,0,0,F$
RD 1290 GOTO 1340
MU 1300 ? "Enter filename to unlock";:INPUT FIL$
JF 1310 F$(3,14)=FIL$:F$(1,2)="D:"
EJ 1320 XIO 36,#2,0,0,F$:GOTO 1340
QO 1330 GOTO 40
PL 1340 ? "Press Return to continue";:INPUT ANS$:TRAP 950:GOTO 1000
```

THE GAME THAT SHOOK THE WORLD

reviewed by John S Davison

I'm not usually a fan of computerised board games, as I prefer playing them as originally intended – on a board, and with real people rather than a computer, but Domark's computerised version of the hugely popular Trivial Pursuit could change all that, as it's not just a straight copy of the original. It actually uses the computer's features to enhance the game.

If you don't know what the game's about, you must have been on the far side of the moon for the last few years! It's the biggest thing to hit the board game scene since Monopoly, and enjoys worldwide popularity. I won't attempt a detailed explanation of it here – let's just say if you can correctly answer a few trivial general knowledge questions, you'll probably enjoy Trivial Pursuit, and could even do well at it.

The program comes in high quality packaging, exactly matching the style of the board game. Two disks are provided, a program disk and a questions disk, the latter containing some 3,000 questions in six categories. An illustrated leaflet explains the principles of Trivial Pursuit as well as how to operate the program. This version corresponds to the original 'Genus' edition, but with different questions. Domark are said to be working on other versions, including the Young Player, Baby Boomer, and Genus II editions. The program runs on any 8-bit Atari with 48K or more, and there's a cassette version available (if you insist).

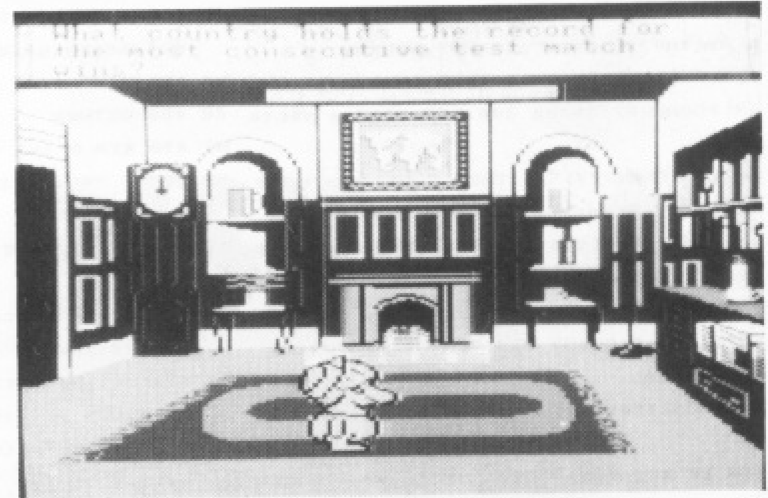
MEET THE QUESTION MASTER

Two to six players (or teams of players) can take part. Obviously, you can't play against the computer as it already knows all the answers! The first job after booting up is to key in the players' names. From here on, the computer addresses each player by name when asking questions. You can also set various game parameters, like time limit for answering questions, sound effects on or off, and whether TP is awake or not.

Who the heck is TP, did you say? Well, he's the cute little chap who acts as the question master. No, wait....I groaned too when I saw this feature, as cuteness in computer games tends to turn to irritation very quickly. But in this case I actually like having TP there, and miss him when he's not. (No, JSD is NOT going soft in his dotage!).

You also have to choose the starting point in the set of questions, otherwise you'd get the same questions asked every time you played – OK if you want to cheat, I guess. The program has the facility to skip through the disk sectors until you get to the required place. It's worth keeping a note of which sector you get to in each game, so you can restart there next time you play. The program tells you which sectors it's loading each time it reads in more questions.

The game is played on two main screens – the 'board screen' and the 'question screen'. As you'd expect, the board



Trivial Pursuit – Domark
Disk £19.95 Cassette £14.95

screen shows the playing board, plus the tokens and coloured 'wedges' (won by correctly answering certain questions) for each of the players. Instead of throwing dice, TP randomly throws a dart into the board, which has meanwhile magically divided itself into segments numbered 1 to 6. The program then highlights all of the possible moves the player can make from his current position. After the player has chosen one using the joystick, TP trots off the board screen and onto the question screen to ask a question from the corresponding category.

The question screen depicts a sitting room, complete with furnishings. Some of these are cleverly used in the game – for instance, there's a grandfather clock which shows you how long you've been playing. The fingers actually move, and it chimes every 15 minutes.

NEW TYPES OF QUESTIONS

Occasionally, TP walks across to a hi-fi set and turns it on to play music to you, and then asks you a question about it. As the music plays, a row of LEDs flickers and flashes on the front of the hi-fi, a neat detail. TP also jigs about in time to the music. A roller screen is attached to the ceiling of the room. Sometimes TP unrolls it, dims the lights (another neat touch), and projects a picture onto it, about which you get a question, of course. You get neither the musical nor picture questions in the original game, and these are the two major enhancements Domark have put into this version.

Certain other features of the room are entertaining too, such as the alcove shelves and mantleshelf. Each time you go to the question screen there's a different set of objects displayed in different places on them. Spotting what the differences are is almost a game in itself.

CANDLE TIMER

The questions appear in a text window at the top of the screen, with TP emitting strange babbling noises as each is written out. Surprisingly again, I didn't find this irritating, but you CAN switch off the sound effects if you don't like them. The question stays on the screen until the time limit expires, marked by a candle on a shelf burning down to

nothing. You have to say your answer out loud before that happens. TP then puts the correct answer on the screen, and your opponents decide whether your answer was near enough, just like in the original game. The program is told of their decision via a simple YES/NO menu using the joystick. While TP is waiting for your answer, he paces back and forth across the screen, pausing and tapping his foot impatiently now and then.

TP's headgear is a source of amusement, too. He wears a different hat for each category of question, and if you get too many questions wrong, he eventually takes to wearing a dunce's cap for your turn! He also makes mild comments about your performance. Once more, Domark seem to have hit just the right level with this, as it has a very low irritation factor.

The program keeps statistics on right and wrong answers in each category for each player, so you (and your opponents) can see which are your best (or worst!) subjects – yet one more nice touch.

UNIVERSAL APPEAL

This game has given enormous enjoyment to everyone I've played it with, from quite young children (who like it because of TP) to senior citizens (no, that doesn't include me!). It's one of the few computer games I've come across with universal appeal, and as such makes ideal family entertainment. It's great! Well done, Domark! And thanks for bringing out an 8-bit Atari version so promptly.

Trivial Pursuit is available from Software Express in Birmingham, who kindly provided a copy for review, or from your usual retailer.

SOURCE Writer

Take the hard work out of disassembly by writing direct to disk

The normal run of the mill disassemblers available will produce a listing to printer or screen. This is normally very fine and informative but sometimes we need to customise an existing object code program and to do this the whole disassembly has to be typed in by hand, modified and reassembled. SOURCE WRITER makes this task redundant as you can disassemble your choice of object code and obtain a disassembled source file on disk ready to modify and assemble as you please.

SOURCE WRITER will disassemble a disk file or a collection of disk sectors, a cassette file or an area of memory. Try 0600 to 0620 from memory, for example, and you'll get a disassembly of the cassette loading routine. The format of the disassembly is: line no., address, instruction, and optional data such as Hex and ASCII representation of the code to assist in determining text. An example output is – 11 A0600 PLA *68 " followed by ASCII representation.

The address noted in the label field is essential for tracing branch JMP and JSR instructions. These can be deleted and replaced by your own labels or left as they are, as you wish. The source files can now be customised and assembled as required.

SYNASSEMBLER OR ASSEMBLER EDITOR?

The files generated by SOURCE WRITER are Synassembler compatible but this can easily be made Assembler Editor compatible by making the following changes:

Replace ' .OR$' in line 430 with '* = $'.
Replace ' .HS ' in line 480 with '.BYTE $'.
Replace ' *' in line 880 with ';'.

USING THE PROGRAM

After initialising, SOURCE WRITER will display the options available

1 Object code from disk
2 Object code from cassette
3 Object code from memory
4 Object code from disk by sector

Option 1 will read a DOS object code file into F$ for disassembly. Option 2 will read a cassette based object code file into F$. Option 3 will transfer a specified area of memory (ROM or RAM) into F$. The start and end addresses are required in hexadecimal. Option 4 will read a sequence of sectors into F$ in two ways. The first prompt is for starting sector, the second prompt asks if you are anticipating a six byte header. With a DOS disk in drive 1 SOURCE WRITER will disassemble the first 3 boot sectors, however, if you are not expecting a six byte header SOURCE WRITER will next ask for the origin the disassembly is to start at (hexadecimal of course) and the final prompt will then ask for the final sector to be read.

After one of the four options has been completed the next prompt is "Disassembly with Hex Y/N" a 'Y' will cause a note of the object code to be made in the remark field in the line of a disassembly. The next prompt will ask "Disassembly with Ascii Y/N" a 'Y' will cause a note of the Ascii characters represented by the object code to be made in the remark field. This option is extremely useful when trying to determine areas of text within a disassembly.

The final prompt of all is to ask for the name you wish the generated source files to be called. "D1:" is assumed so just type in the file name with no extender. A large file will be broken down into a collection of small manageable files. Each file will be forty to fifty sectors in length. The first file will be "D1:TEST.1" followed by "D1:TEST.2" etc. At ten file intervals you will be asked to insert a blank formatted disk and so on, every ten files. This prevents nasty disk full errors and gives you some work space on each disk.

Unfortunately SOURCE WRITER is a little slow at this stage, so drag out the duster and vacuum and help with the housework. Do not be disheartened however as you are saving yourself hours of keyboard work and making a friend of the au pair!

When SOURCE WRITER has finished you will be given the option of starting another disassembly.

Your limitations? I'm afraid 16k of object code on a 48k RAM machine. Still that's an awful lot of files.

by T.J.P. Peart-Jackson

PROGRAM BREAKDOWN

10 – 60	**start display**
70 – 190	**sets up and initialises strings and arrays**
200 – 280	**displays options**
290 – 970	**is the disassembler and source file writer**
980 – 1100	**will read a DOS file into F$ for disassembly**
1100 – 1260	**will read a cassette file into F$**
1270 – 1430	**will transfer a specified area of memory into F$**
1440 – 1610	**will load specified sectors into F$**
1620 – 1720	**sequentially numbers the source files and prevents disk overflow**
1730 – 2000	**is data for the disassembler**
2010	**is cassette loader data**
2020 – 2030	**is the DOS file loader data.**

```
QK 1 REM ******************************
SC 2 REM *       SOURCE WRITER        *
YK 3 REM *  by T.J.P. Peart-Jackson  *
IY 4 REM * -------------------------- *
RJ 5 REM * PAGE 6 MAGAZINE - ENGLAND *
QP 6 REM ******************************
NM 7 REM
QU 10 GRAPHICS 0:POKE 710,178:POKE 752,1:POKE 755,0
CE 20 OPEN #3,4,0,"K:"
Q5 30 POKE 85,13:? "SOURCE WRITER"
OZ 40 POKE 85,3:? "A 6502 SOURCE CODE FILE GENERATOR"
RU 50 POKE 85,7:? "by T.J.P.Peart-Jackson "
IY 60 POKE 85,7:? " for Page six magazine "
XM 70 DIM FIRST$(9),A$(20),CD(255,2),NAME$(168),PC$(2),ADDR$(4),B$(1),C$(2),D$(2),E$(2),FILE$(14),H$(80),FNAME$(12)
XG 80 DIM LAST$(4),START$(4),W$(92),HEX$(1),ASCII$(1),RAM$(58),CIOV$(61)
DA 90 W$="hh h h.Nh.MZK %L )R ) h S i i n I p.FMZKI p\PXn p%MI p 8FNOH "
WO 100 RAM$="hh.Lh.Kh.Mh.Kh.Oh.P8 IK.MHQ p.FP%PI p/0mfLfNOp%OI p F00) "
TY 110 Z=PEEK(742)*256+PEEK(741)-PEEK(145)*256+PEEK(144)-550:DIM F$(Z)
AS 120 FOR I=0 TO 255:CD(I,1)=0:CD(I,2)=0:NEXT I
HW 130 FOR I=1 TO 150:READ A,B,C:CD(A,1)=B:CD(A,2)=C:NEXT I
OB 140 NAME$(1,84)="ADCANDASLBCCBCSBEQBITBMIBNEBPLBRKBVCBVSCLCCLDCLICLVCMPCPXCPYDECDEXDEYEORINCINXINYJMP"
RJ 150 NAME$(85,168)="JSRLDALDXLDYLSRNOPORAPHAPHPPLAPLPROLRORRTIRTSSBCSECSEDSEISTASTXSTYTAXTAYTSXTXATXSTYA"
QG 160 ? CHR$(125):POKE 755,0
BT 170 FOR I=1536 TO 1565:READ A:POKE I,A:NEXT I
JP 180 FOR I=1 TO 61:READ A:CIOV$(I)=CHR$(A):NEXT I
KE 190 F$(1)="♥":F$(Z)="♥":F$(2)=F$
OD 200 ? "K1=Object code from disc"
JQ 210 ? "2=Object code from cassette"
ND 220 ? "3=Object code from memory"
KA 230 ? "4=Object code from disc by Sector"
HK 240 GET #3,K
IY 250 IF K<49 OR K>52 THEN 240
NE 260 ON K-48 GOSUB 980,1110,1270,1440
IW 270 ? "KDisassembly with Hex Y/N";:INPUT HEX$
PA 280 ? "KDisassembly with Ascii Y/N";:INPUT ASCII$
UG 290 ? "KENTER SOURCE CODE FILE NAME          NO ";CHR$(34);"D1:";CHR$(34);" REQUIRED.DRIVE D1 ASSUMED"
YN 300 ? "DO NOT USE AN EXTENDER"
AH 310 INPUT FNAME$
NF 320 FILE$="              "
MZ 330 FILE$="D1:":FILE$(4)=FNAME$:FILE$(LEN(FILE$)+1)=".1"
FD 340 OPEN #2,8,0,FILE$
BH 350 ? "WRITING ";FILE$
FP 360 PASS=1:LINE=10:XY=400
WB 370 IF T>F THEN POKE 82,2:CLOSE #2:? :? "PRESS ANY KEY";:GET #3,K:GOTO 190
BG 380 IF T>XY THEN CLOSE #2:GOSUB 1620:GOSUB 1720:XY=XY+400:OPEN #2,8,0,FILE$:PASS=PASS+1:? "WRITING ";FILE$
TJ 390 C$=" ":D$=" ":E$=" "
HU 400 CODE=ASC(F$(T,T)):FL=0:HEX=CODE:GOSUB 770
XD 410 ADDRESS=PC
LZ 420 HEX=INT(PC/256):GOSUB 770:ADDR$(1,2)=PC$:HEX=PC-HEX*256:GOSUB 770:ADDR$(3,4)=PC$
AO 430 IF PASS=1 THEN ? #2;LINE;"  .OR $";ADDR$:PASS=PASS+1:LINE=LINE+1
IZ 440 TYPE=CD(CODE,2):PC=PC+1:T=T+1
MF 450 IF TYPE=4 OR TYPE=5 OR CD(CODE,1)=0 THEN HEX=ASC(F$(T-1,T-1)):GOSUB 770:C$=PC$
KK 460 IF TYPE=1 OR TYPE=3 OR TYPE=6 OR TYPE=7 OR TYPE=8 OR TYPE=11 OR TYPE=13 THEN GOSUB 850
LV 470 IF TYPE=2 OR TYPE=9 OR TYPE=10 OR TYPE=12 THEN GOSUB 860
GG 480 IF CD(CODE,1)=0 THEN ? #2;LINE;" A ";ADDR$;" .HS  ";C$;:GOSUB 900:LINE=LINE+1:GOTO 370
BX 490 PS=(CD(CODE,1)-1)*3+1
KH 500 ? #2;LINE;" A";ADDR$;" ";NAME$(PS,PS+2);
HD 510 LINE=LINE+1
LM 520 B$=NAME$(PS,PS)
PE 530 IF TYPE=4 THEN ? #2;:GOSUB 880:GOTO 370
PT 540 IF TYPE=5 THEN ? #2;:GOSUB 880:GOTO 370
SF 550 IF TYPE=1 THEN HEX=ASC(F$(T,T)):GOSUB 770:? #2;" #$";PC$;:GOSUB 880:PC=PC+1:T=T+1:GOTO 370
IN 560 IF TYPE=3 THEN HEX=ASC(F$(T,T)):GOSUB 770:? #2;" $";PC$;:GOSUB 880:PC=PC+1:T=T+1:GOTO 370
WE 570 IF TYPE=2 THEN ? #2;" $";:HEX=ASC(F$(T+1,T+1)):GOSUB 770
BR 580 IF TYPE=2 THEN ? #2;PC$;:HEX=ASC(F$(T,T)):GOSUB 770:? #2;PC$;:GOSUB 880:PC=PC+2:T=T+2:GOTO 370
OL 590 IF TYPE=6 THEN ? #2;" ($";:HEX=ASC(F$(T,T)):GOSUB 770:? #2;PC$;",X)";:GOSUB 880:PC=PC+1:T=T+1:GOTO 370
OA 600 IF TYPE=8 THEN ? #2;" $";:HEX=ASC(F$(T,T)):GOSUB 770:? #2;PC$;",X";:GOSUB 880:PC=PC+1:T=T+1:GOTO 370
TA 610 IF TYPE=7 THEN ? #2;" ($";:HEX=ASC(F$(T,T)):GOSUB 770:? #2;PC$;"),Y";:GOSUB 880:PC=PC+1:T=T+1:GOTO 370
ZI 620 IF TYPE=9 THEN ? #2;" $";:HEX=ASC(F$(T+1,T+1)):GOSUB 770
RE 630 IF TYPE=9 THEN ? #2;PC$;:HEX=ASC(F$(T,T)):GOSUB 770:? #2;PC$;",X";:GOSUB 880:PC=PC+2:T=T+2:GOTO 370
TQ 640 IF TYPE=10 THEN ? #2;" $";:HEX=ASC(F$(T+1,T+1)):GOSUB 770
MR 650 IF TYPE=10 THEN ? #2;PC$;:HEX=ASC(F$(T,T)):GOSUB 770:? #2;PC$;",Y";:GOSUB 880:PC=PC+2:T=T+2
KK 660 IF TYPE=12 THEN ? #2;" ($";:HEX=ASC(F$(T+1,T+1)):GOSUB 770
BE 670 IF TYPE=12 THEN ? #2;PC$;:HEX=ASC(F$(T,T)):GOSUB 770:? #2;PC$;")";:GOSUB 880:PC=PC+2:T=T+2:GOTO 370
NA 680 IF TYPE=13 THEN ? #2;" $";:HEX=ASC(F$(T,T)):GOSUB 770:? #2;PC$;",Y";:GOSUB 880:PC=PC+1:T=T+1:GOTO 370
ZI 690 IF TYPE=11 THEN HEX=ASC(F$(T,T)):GOSUB 770:? #2;
IZ 700 IF B$="B" THEN 720
PH 710 GOTO 370
BG 720 BRANCH=ASC(F$(T,T))
GX 730 IF BRANCH<=128 THEN BRANCH=ADDRESS+2+BRANCH:GOTO 750
LT 740 IF BRANCH>=129 THEN BRANCH=ADDRESS-(255-BRANCH-1)
KF 750 HEX=INT(BRANCH/256):GOSUB 770:? #2;" $";PC$;:HEX=BRANCH-HEX*256:GOSUB 770:? #2;PC$;:GOSUB 880
PL 760 PC=PC+1:T=T+1:GOTO 370
TH 770 HEX2=INT(HEX/16):HEX3=HEX2+(HEX2<10)*48+(HEX2>9)*55:PC$=CHR$(HEX3)
SS 780 HEX2=HEX-HEX2*16:HEX3=HEX2+(HEX2<10)*48+(HEX2>9)*55:PC$(2)=CHR$(HEX3)
ZV 790 RETURN
RK 800 HEX=ASC(A$(1,1))-48:IF HEX>9 THEN HEX=HEX-7
OH 810 HEX=HEX*16
MK 820 HEX2=ASC(A$(2,2))-48:IF HEX2>9 THEN HEX2=HEX2-7
OA 830 HEX=HEX+HEX2
ZM 840 RETURN
TK 850 HEX=ASC(F$(T-1,T-1)):GOSUB 770:C$=PC$:HEX=ASC(F$(T,T)):GOSUB 770:D$=PC$:RETURN
TW 860 HEX=ASC(F$(T-1,T-1)):GOSUB 770:C$=PC$:HEX=ASC(F$(T,T)):GOSUB 770:D$=PC$
EC 870 HEX=ASC(F$(T+1,T+1)):GOSUB 770:E$=PC$:RETURN
RL 880 IF HEX$="Y" THEN ? #2;"   *";C$;D$;E$;
OU 890 IF ASCII$="N" THEN ? #2:RETURN
VS 900 A$=C$:GOSUB 800:? #2;" ";CHR$(34);CHR$(HEX);
BN 910 A$=D$:IF ASC(A$)=32 THEN HEX=32:GOTO 930
TX 920 GOSUB 800
LZ 930 ? #2;CHR$(HEX);
HA 940 A$=E$:IF ASC(A$)=32 THEN HEX=32:GOTO 960
UD 950 GOSUB 800
VC 960 ? #2;CHR$(HEX)
ZT 970 RETURN
SF 980 ? "KENTER FILE NAME":INPUT FNAME$
PI 990 FILE$="D:":FILE$(3)=FNAME$
QA 1000 CLOSE #1:OPEN #1,4,0,FILE$
KB 1010 GET #1,A:GET #1,B
NN 1020 IF A<>255 OR B<>255 THEN ? "K█NOT BINARY FILE":? "Press any key":GET #3,K:GOTO 200
MZ 1030 GET #1,C:GET #1,D
UN 1040 PC=D*256+C
PX 1050 GET #1,E:GET #1,F
KX 1060 FIN=F*256+E
SQ 1070 F=FIN-PC+6
NH 1080 CLOSE #1
OG 1090 X=USR(ADR(CIOV$),ADR(FILE$),ADR(F$),F)
Q5 1100 T=7:RETURN
FN 1110 POKE 203,ADR(F$)-(INT(ADR(F$)/256)*256):POKE 204,INT(ADR(F$)/256)
RA 1120 ? "KREADY CASSETTE."
JO 1130 ? "PRESS RETURN."
MI 1140 TRAP 1200
XQ 1150 CLOSE #1:OPEN #1,4,255,"C:"
HS 1160 FOR T=1 TO Z STEP 128
LU 1170 GET #1,BYTE
MS 1180 X=USR(1536)
KJ 1190 NEXT T
KR 1200 TRAP 40000:CLOSE #1
FJ 1210 F=T
EK 1220 C=ASC(F$(3,3))
FZ 1230 D=ASC(F$(4,4))
EL 1240 PC=D*256+C+6
AD 1250 T=7
AV 1260 RETURN
PL 1270 TRAP 1270:FIRST$="":? "KSTART ADDRESS IN HEXADECIMAL";:INPUT FIRST$:IF LEN(FIRST$)<>4 THEN 1270
NA 1280 FL=0:FOR I=1 TO 4:A$=FIRST$(I,I)
NA 1290 IF (A$>="0" AND A$<="9") OR (A$>="A" AND A$<="F") THEN 1310
TG 1300 FL=1
EY 1310 NEXT I
EG 1320 IF FL=1 THEN 1270
TV 1330 TRAP 1330:LAST$="":? "END ADDRESS IN HEXADECIMAL";:INPUT LAST$:IF LEN(LAST$)<>4 THEN 1330
ON 1340 TRAP 40000
ER 1350 FL=0:FOR I=1 TO 4:A$=LAST$(I,I)
DS 1360 IF (A$>="0" AND A$<="9") OR (A$>="A" AND A$<="F") THEN 1380
UB 1370 FL=1
FT 1380 NEXT I
CP 1390 IF FL=1 THEN 1330
BZ 1400 A$=FIRST$(1,2):GOSUB 800:PC=HEX*2
```

```
   56:A$=FIRST$(3,4):GOSUB 800:PC=PC+HEX:
   T=1
GQ 1410 A$=LAST$(1,2):GOSUB 800:LAST=HEX*
   256:A$=LAST$(3,4):GOSUB 800:LAST=LAST+
   HEX:F=LAST-PC+1
BP 1420 X=USR(ADR(RAM$),PC,ADR(F$),F)
AQ 1430 RETURN
ZR 1440 ? "KENTER SECTOR AT WHICH TO STAR
   T          DISSASEMBLY";:INPUT STARTSECT
   OR
TY 1450 ? "KDISSASEMBLE WITH HEADER Y/N";
   :INPUT A$
HH 1460 IF A$="N" THEN 1490
JI 1470 IF A$="Y" THEN 1540
SD 1480 GOTO 1450
OG 1490 ? "KENTER ORIGIN IN HEX";:INPUT A
   DDR$:PASS=PASS+1
OR 1500 ? "KENTER LAST SECTOR TO READ";:I
   NPUT ENSECTOR
RS 1510 A$=ADDR$(1,2):GOSUB 800:PC=HEX*25
   6:A$=ADDR$(3,4):GOSUB 800:PC=PC+HEX
FU 1520 SECTORS=ENSECTOR-STARTSECTOR+1
BK 1530 GOSUB 1580:T=1:RETURN
EK 1540 SECTORS=1:GOSUB 1580
ZW 1550 SECTORS=ASC(F$(2,2))
MD 1560 C=ASC(F$(3,3)):D=ASC(F$(4,4)):PC=
   D*256+C+6
GG 1570 GOSUB 1580:T=7:RETURN
GQ 1580 POKE 203,ADR(F$)-(INT(ADR(F$)/256
   )*256):POKE 204,INT(ADR(F$)/256)
JD 1590 X=USR(ADR(W$),STARTSECTOR,SECTORS
   )
AL 1600 F=SECTORS*128
AO 1610 RETURN
LO 1620 FOR I=1 TO LEN(FILE$):A$=FILE$(I,
   I)
PG 1630 IF A$="." THEN 1650
FN 1640 NEXT I
RO 1650 A=VAL(FILE$(I+1))
JE 1660 FOR IT=1 TO 17
IK 1670 IF A=10*IT THEN 1700
ST 1680 NEXT IT
BM 1690 RETURN
DS 1700 ? "KINSERT NEW BLANK FORMATTED DI
   SC":? "PRESS ANY KEY WHEN READY":GET #
   3,K
AQ 1710 RETURN
FX 1720 A=A+1:FILE$(I+1)=STR$(A):POKE 77,
   0:RETURN
KW 1730 DATA 105,1,1,109,1,2,101,1,3,97,1
   ,6,113,1,7,117,1,8,125,1,9,121,1,10
UR 1740 DATA 41,2,1,45,2,2,37,2,3,33,2,6,
   49,2,7,53,2,8,61,2,9,57,2,10
ES 1750 DATA 14,3,2,6,3,3,10,3,4,22,3,8,3
   0,3,9
OU 1760 DATA 144,4,11,176,5,11,240,6,11,4
   4,7,2,36,7,3
DW 1770 DATA 48,8,11,208,9,11,16,10,11,0,
   11,5,80,12,11
YF 1780 DATA 112,13,11,24,14,5,216,15,5,8
   8,16,5,184,17,5
UH 1790 DATA 201,18,1,205,18,2,197,18,3,1
   93,18,6,209,18,7,213,18,8,221,18,9,217
   ,18,10
FV 1800 DATA 224,19,1,236,19,2,228,19,3
LA 1810 DATA 192,20,1,204,20,2,196,20,3
KG 1820 DATA 206,21,2,198,21,3,214,21,8,2
   22,21,9
YL 1830 DATA 202,22,5,136,23,5
VV 1840 DATA 73,24,1,77,24,2,69,24,3,65,2
   4,6,81,24,7,85,24,8,93,24,9,89,24,10
ZM 1850 DATA 238,25,2,230,25,3,246,25,8,2
   54,25,9,232,26,5,200,27,5
KZ 1860 DATA 76,28,2,108,28,12,32,29,2
OW 1870 DATA 169,30,1,173,30,2,165,30,3,1
   61,30,6,177,30,7,181,30,8,189,30,9,185
   ,30,10
KW 1880 DATA 162,31,1,174,31,2,166,31,3,1
   90,31,10,182,31,13
VL 1890 DATA 160,32,1,172,32,2,164,32,3,1
   80,32,8,188,32,9
LY 1900 DATA 78,33,2,70,33,3,74,33,4,86,3
   3,8,94,33,9
OL 1910 DATA 9,35,1,13,35,2,5,35,3,1,35,6
   ,17,35,7,21,35,8,29,35,9,25,35,10,234,
   34,5
MD 1920 DATA 72,36,5,8,37,5,104,38,5,40,3
   9,5
GU 1930 DATA 46,40,2,38,40,3,42,40,4,54,4
   0,8,62,40,9
YI 1940 DATA 110,41,2,102,41,3,106,41,4,1
   18,41,8,126,41,9
NC 1950 DATA 64,42,5,96,43,5
FP 1960 DATA 233,44,1,237,44,2,229,44,3,2
   25,44,6,241,44,7,253,44,8,249,44,9
TB 1970 DATA 56,45,5,248,46,5,120,47,5
UU 1980 DATA 141,48,2,133,48,3,129,48,6,1
   45,48,7,149,48,8,157,48,9,153,48,10
EM 1990 DATA 142,49,2,134,49,3,150,49,13,
   140,50,2,132,50,3,148,50,8
HJ 2000 DATA 170,51,5,168,52,5,186,53,5,1
   38,54,5,154,55,5,152,56,5
NW 2010 DATA 104,174,138,2,134,61,160,0,1
   62,0,185,0,4,129,203,200,230,203,208,2
   ,230,204,196,61,240,3,76,10,6,96
AB 2020 DATA 104,162,64,169,3,157,66,3,10
   4,157,69,3,104,157,68,3,169,4,157,74,3
   ,32,86,228,162,64,169,7,157,66,3,104
BR 2030 DATA 157,69,3,104,157,68,3,104,15
   7,73,3,104,157,72,3,32,86,228,162,64,1
   69,12,157,66,3,32,86,228,96
```



HARD DISK

WORTH YOUR WHILE?

DEGAS Elite - Reviewed inside

Type-In Software



DEGAS FADER

Reviews

TYPESETTER ELITE

FAST BASIC

Colourspace

Karate Kid II

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Microdeal have released a clock card which they claim leaves all the others behind. The **Micro-Time Clock Card** was developed in the States but Microdeal were so impressed by it that they negotiated a deal to produce it in England and the card is now available at just £34.95. What makes the card special is that it fits inside the machine with no soldering and with the minimum of disassembly. It comes with NiCad batteries that recharge each time the computer is switched on and can be adjusted depending on how often you use your machine. Software is provided for setting up but from there on all you need is the Control Panel on your boot disk.

Also from **Microdeal** is **Shuttle II**, a game come simulation, putting you in charge of an advanced shuttle able to take off from a runway. Lots of things to consider such as wind speed and cloud cover before getting into orbit. Once there, having ditched the boosters on the way, you have to do a bit of ETA to retrieve a faulty communications satellite before getting back to earth. In the 1990's you'll be able to get a seat on the Shuttle for real, but not for £24.95!

Eidersoft, mentioned a couple of issues ago as bringing out several arcade style games at PCW, are rapidly expanding their horizons with some top quality professional applications and add-ons. Top of the line is Publishing Partner, a complete page layout system from the States which caused quite a stir when shown at Comdex last year. **Minicomm** is a complete comms program as a *desk accessory* and features Xmodem and Kermit protocols among others. Loads of functions including the ability to cut and paste to word processors. **Professional Sprite Designer** sounds just what budding games designers might need allowing sprites to be designed and tested before being saved to be used in other programs. On the hardware side is the first Graphics Tablet for the ST, **Pro-Draw** which works with all programs that use the mouse and a **20Mb hard disk** that is claimed to be faster and cheaper than Atari's own. Keep an eye on Eidersoft.

Mastertronic have two titles coming for the ST at a 'budget' price of £9.95 (well how much do most programs cost?). Both are games and are titled **Renegade** and **Ninja Mission**.

Infocom's latest for the ST only (i.e. not 8-bit Atari) is **Portal: A Computer Novel** with the promise of a new experience of computer literature. This is not an adventure in the conventional sense and will allow a great deal of interaction between the player and the program. The start of new concept or clever use of advertising blurb? Either way, it sounds interesting.

Rumours from, or rather about, **Atari** are that they will introduce later this year a full **Desktop Publishing** system including laser printer for around £2000 and hard disks at a fraction of their present cost by using 'reject' 20Mb drives and remapping them to get 15 or 16Mb without problems. Will these come before or after the CD-Roms?

At the CES Show in Las Vegas in January Atari actually showed a prototype of their laser printer which uses the DMA port of the ST and therefore the ST's CPU to save on the cost of an on-board processor. This makes it useable only with the ST but also makes it cheap. Also on show were 'Mega ST's with detachable keyboards and radically redesigned internals with room for enhancements such as add-in cards and new circuit boards. Atari say they will be 100% compatible with existing models. •

PROGRAMMERS GUIDE TO GEM

published by SYBEX £19.95

reviewed by Matthew Jones.

GEM is not a system that you can learn overnight. Indeed if you are new to programming a graphics oriented system, then you will find that there are a large number of new concepts which you have to grasp in order to fully understand, and thus get the best out of, GEM. The first books published which gave information about GEM programming were very much repeats of the Digital Research 'GEM Programmers Guide', giving a function by function description of the facilities of GEM. They told you, for instance, that to set the font alignment to baseline mode, then you use such-and-such a call. What they did not do was tell you why you would want to set the alignment at all. This is where the SYBEX 'Programmers guide to GEM' comes in.

This book, aimed at both IBM and Atari owners (see later), gives you a good grounding to each set of library functions, explaining what they do, why you would want to do them, and it usually gives a few examples of 'C' source code to experiment with. Very good use is made of illustrations to support the text (in the given alignment case, an example of each effect is shown).

The book has six chapters, covering: Introduction to GEM; the Application Environment Services (AES), including an overview and then complete function descriptions; The Virtual Device Interface (VDI), including a short primer on graphics and then the VDI functions; GEM SAMPLE PROGRAM: HELLO, a complete GEM application, with listing and full explanation; GEM DEMO (DOODLE), a more complex example (see below); ADVANCED GEM TOPICS, including design, Metafiles, debugging, the bindings, and a tool survey. The six appendixes include a good glossary, AES and VDI quick references, Resource construction set tutorial, the listing of DEMO, and Metafile functions.

While I think that the general descriptions of the AES and VDI functions of this book make it the best yet, what really makes it a must for the new programmer is the two sample programs. When I first started GEM programming, all I had to learn from was a single relatively un-commented listing (ahh!). This book provides two complete programs (header files as well) as examples, and thoroughly explains why each command is being done. Thus instead of telling you that at the start of your program you should have these seven lines, it actually explains why you should have them, and what they are doing. By providing this sort of information you will become a much more proficient programmer because you will understand what you are doing. The second example used is DRI's DR DOODLE program, and includes listings of all of the standard GEM header files.

While this book is very good, it does have its omissions. I cannot find any reference to the vqmouse or vqtattributes functions, or indeed many other 'lower level' functions. The reason for this (according to the preface), is that they wanted to give a 'conceptual framework' tutorial, not a reference manual. But although you will still need a separate 'function by function' manual, the books advantages outweigh this (I think slight) disadvantage.

In general, this book is well worth the (rather large) asking price, and I recommend it for anyone's library. •

TYPESETTER ELITE
XLENT Software (UK)

Desktop Publishing everyone can afford?

The king is dead, long live the king! That's one way of looking at Typesetter Elite, the upgrade from Typesetter ST. Gem based, mono and colour versions, print preview, undo command, quad density output to Epson RX/FX printers are just some of the new improvements embedded into Typesetter Elite. One of the major improvements to me is the documentation, I can now actually understand what the programmers are trying to say which is probably due to an outsider being hired to write the manual.

Typesetter Elite is a program that allows you to compose pages of text and graphics on the ST and then print them out on a range of different printers. The amount of detail in this program is tremendous and if I had to review every single command then this review would take up half of the magazine. If you've ever used any Xlent Software programs before then you'll know that the manual will need to be read over and over again to fully understand the program and Typesetter Elite is no different, below is a precis of the main part.

There are seven drop down menus from the main menu bar, each menu has from four to ten commands, each command usually has a number of options and many commands and options can alter the output of other commands! Not only do you have to contend with the menus but also the function buttons change with some of the commands chosen. Under the Menu 'FILE' you can load a page (80K), screen (32K), font, NLQ font, Icon, border, and 80 column text page. Page, screen, Icon and borders can also be saved to disk. The drive can be changed from 'A' through to 'F'. View the directory, alter the loading mode from Replace to Overlay and Quit finally finish off this first menu!

An example of how involved the program can be is the use of 'screens and pages'. When you view a screen you see approximately forty percent of the page, in other words you're looking through a window which can be moved around to suit your requirements. Fonts can be loaded from the program disk or from Megafont ST or DEGAS compatible files. With the load mode on Replace this will overwrite the current image on the screen/page and by using Overlay you can create interesting effects by laying screens/pages on top of each other WHICH is an extremely handy way to build up your designs. The 80 column text page is a separate part to Typesetter Elite and this will be discussed further on.

The second menu is the graphics mode. Selections here include the basic commands generally found in most graphics programs – Draw, Line, K-line, Rectangle, Ellipsoid, Fill and Eraser. Other options include Drag (move), or Copy and these can be in either Replace or Overlay mode. The move and copy functions are a little peculiar, the maximum size of the screen you can move at any one time is about eleven percent in mono and about twenty-five percent in low res colour. Many of the commands in the graphics menu can be altered by the commands from the following menu, the Graphics options. These include Pen sizes in nine thicknesses from one pixel wide to about seven millimetres wide, a fill index for interior patterns with surprisingly only five choices and four colours (colour version only), a fill style for rectangles and ellipsoids such as Hollow, Solid and Pattern plus another of the mode selectors i.e. Replace, Transparent, and XOR. This last one is an experimental mode and alters text/graphics in a mysterious way. Finally in this section, Grab screen and Paste screen operate as you'd expect.

Menu four controls the graphic text. Graphic fonts are designed on an 8 × 16 matrix and once loaded they can be altered to ten different heights and ten separate widths. Fonts can be Replaced or Overlayed and inverse can be toggled to suit. All-in-all, over 200 variations can be achieved with just one font. In the colour version of Typesetter Elite, the variations can be 800 by using the four colours available

reviewed by Alan Goldsbro

Graphic fonts are not the only fonts available to the user. In menu five there are twenty-three system fonts. These are loaded in at boot up and selected via the system font selection menu. Further options are Thickness (bold), Intensity (light), Italics, Underline, Outline, Replace, Overlay and Alternate. European, Hebrew, Greek, and Control characters are just some of the range of styles. The graphic and system fonts can be toggled by using F4 and F3 respectively with the last font loaded/chosen as the default. Margins can also be set by using function keys.

The penultimate menu is the scrolling window. Up, Down, Left and Right with in-between positions for all directions. There is also a handy HOME position for the top left hand corner. The final menu is Pot Pourri. Four printer drivers are included on the disk, Epson 960/compatibles, Epson 1920/compatibles, Prowriter/NEC 1023 and Gemini 10X. Your drawing/layout can be positioned on the paper either at the margin or the actual position it takes on the screen. If you have a printer capable of quad density (Epson 1920/compatibles) i.e. the FX/RX range, then double offset strike can be selected for bolder printouts. Those who are prepared to wait for approximately four minutes per printed page, can choose the number of copies from 1 to 99.

The Execute Print function has an output size selection which should cater for most people. Choose from Full Page, Screen, Free Form, 75mm × 125mm Index card, 100mm × 150mm Index card, 50mm × 70mm Rolodex card and 24mm × 90mm label. With all the card/label options, the sizing box can be moved around the screen to select your particular portion of the picture. The Free Form option allows you to print out any portion of the screen. The only option missing is the Pre-set 3.5 inch disk label; although this can be achieved by using the free form option. Having selected your size of printout there is an option to preview the page as it will appear on paper. Included in Pot Pourri is an eraser option which has Full Page, Screen and Icon selections although using the Full Page option returns you to

Software Reviews

TYPESETTER ELITE

BY

XLEnt Software

The King is Dead; long live the King! That's one way of looking at Typesetter Elite; the upgraded version of Typesetter ST. GEM based; mono and colour versions; print preview; undo command; quad density output to Epson RX/FX printers. These are some of the new improvements embedded into Typesetter Elite.

520ST

One of the major improvements to me is the documentation, I can now actually understand what the programmers are trying to say, this is due to an outsider being hired to write the manual.

Typesetter Elite is a program that allows you to compose pages of text and graphics on the ST and then print them out on a range of different printers.

the Desk Top, so be warned! Bringing up the rear is Icon Block which allows you to pre-select the position of the Icon when it's loaded from file.

Well we're finally at the end of Typesetter Elite but not at the end of this review, for included on the disk is an 80 column text editor designed especially for Typesetter pages. Text may be written using the editor or Pre-Processor as Xlent call it or alternately load in your text from 1st Word files and save it as a Typesetter 80 Page. (TSE80) This page can be loaded into Typesetter Elite using the 'Load 80 Page' command. The TSE80 is compatible with Thunder (spelling checker) from Batteries Included. Commands within TSE80 are fairly simple and sparse.

Typesetter Elite is a huge improvement from the original Typesetter ST. It's priced at £34.95 from Xlent Software (UK) or from most advertisers in Page 6. It's not copy protected (well done again, Xlent), comes with a 28 page manual which is surprisingly easily read although it has the usual hallmarks of good humour and spelling mistakes associated with Xlent!

On a personal note, whilst I thoroughly enjoyed using Typesetter Elite (it gets much easier the more you use it) I don't like the forty percent windowing technique. Slider bars would have made this a much more enjoyable package. The lack of Zoom facilities, the annoying 'blob' that gets left on the screen every time you click on something from one of the Drop down menus if you're in the drawing mode, the all important 3.5 inch disk label function (what size of disks do Xlent use?) and the small size of the printed page (8" × 9") were frustrating. To be fair to Xlent Software, Typesetter Elite is not meant to be a full featured page layout program but by using your own pictures, Icons or Rubber Stamp (Xlent Software) you can create a page layout with a host attributes that should please the majority of ST users, me included! ●

HARD DISKS
and in particular Atari's SH204, 20 Megabyte hard disk

by Matthew Jones

WHAT IS A HARD DISK?

A hard disk is the optimum development of the floppy disk. A floppy disk, like the 3½ inch disks used on the Atari ST, is a thin disk of plastic, covered with a thin film of a magnetic material similar to that used to make audio and video tapes. The amount of data that can be reliably stored on such a disk is limited by several factors, but mainly the speed of rotation. In the case of floppy disks, the spin speed is about 300 rpm and the head is in contact with the disk, which gives a reliable storage volume of about 1 megabyte (as on the Atari double sided drives). Some of the storage limitations of the floppy are caused because they are removable, i.e. if you want to do word-processing, you normally put in the 1stWord disk, if you want to communicate, you put in the faSTcom disk (waddyamean 'plug plug'??). The problem with this is that dust and smoke particles can get on the disk surface making dense data storage unreliable but the floppy is normally able to survive because the head simply pushes the dust out of the way.

The hard disk however spins at a much higher speed (typically 3, 500 rpm) and due to this speed increase the read/write head can 'fly' over the surface. The disk has to be rigid (hence hard) as any variation in the position of the disk in relation to the head could cause damage to both. This provide a much greater data density on the same sized disks. To ensure reliability, a hard disk is enclosed in a vacuum, as a speck of dust would not be pushed out of the way of the head, but would plough up the disk surface (a head crash) and make it unusable. Hard disks with 10, 20, 40 and 120 megabytes from both 5¼ and 3½ inch sizes are currently available.

WHAT USE IS A HARD DISK?

Considering it gives you twenty megabytes or more of storage, instantly available, need I answer this? Not only more storage, but greater access speed too. According to the manual, the SH204 transfers data at 5 megabits per second. It's a big and impressive figure, but let me put it in perspective. A friend of mine reckoned that I could do a two pass compile and link in the time it took his computer to just load the first pass of the compiler from his floppies (and the ST's floppies aren't slow!). A slight exaggeration perhaps, but an indication of the apparent speed.

To the user who has a large amount of data to store (e.g. in a big database), the serious software developer (e.g. when the object code gets too big for one floppy), or a bulletin board operator (for large message bases), a hard disk is invaluable in order to save time.

HOW IS A HARD DISK USED?

Very easily. If you can use the floppy based system, you will find a hard disk easier. The SH204 comes packed in a thick foam padded box, complete with the mains cable, DMA data cable (18" long), manual and boot disk. In essence, it is simply a matter of connecting the cables, copying the boot disk, and following the manual instructions. Once connected up, the first thing you have to do is format the drive. I found that mine was pre-formatted, but I recommend that you do it yourself anyway.

HOW DO YOU GET THE BEST FROM A HARD DISK?

There is one complication with hard disks, and the complication is called 'partitions'. A problem arises because twenty megabytes (20Mb) is a lot of storage space. On a 1Mb or ½Mb floppy disk, there is a finite (but reasonable) limit to the number of files that can be stored but with 20Mb you can have far too many files to be practically managed. It is for this problem that folders (subdirectories) were devised, and they should be used on hard disks, but a more fundamental solution is to split the 20Mb up into two, three, or four 'logical' disk drives, called partitions. One physical drive (device) you can have several logical drives. These logical drives are named C:, D:, E:, and F: (if you have all four). That may seem straightforward to you, and if that is the case then all well and good, but if you cannot quite grasp the concept, read it again, it is important.

The reason it matters is that when you format a hard disk, you format the PHYSICAL device and not a logical drive, thus if you decide that you no longer want the files on drive D:, you cannot format it as this would lose files on C: too. Atari's hard disk utility program (HDX – a GEM based program) allows you to 'psuedo-format' the logical drives with a 'zero' drive option. This clears the root directory, wiping the drive clean, but leaving the other logical drives alone.

Partitioning the hard disk will delete any files on the disk too, but you can edit the partition scheme as you would like it, or choose one of the predefined ones. Typical schemes are 10-5-5, 15-5, 10-10, 5-5-5-5, and you can choose your own (I use 8-4-4-4). If it is your first use of a hard disk, I would recommend 10-5-5 (i.e. C: is 10Mb, D: is 5Mb, E: is 5Mb) to start, but a common method is to set aside a drive for each application you are going to use, and a spare one for general use. (My 8-4-4-4 is general, utilities, development-1, development-2).

The final option of HDX (the others were Format, Partition and Zero), is Markbad. This is used only when you are having problems reading from the hard disk. Just like a floppy, a hard disk can have 'flaky' or unreliable sectors. The hard disk keeps a record of these sectors so that they will not be used to store data, and markbad is a way of adding any new flaky sectors to the list. However, if any sector added to the list is in use by a file, then that file will be lost, so you should back up the logical drive before using markbad.

Having decided on your partition scheme, using the partition is just the same as using a floppy disk, though thoughtful use of folders is essential.

HOW RELIABLE IS A HARD DISK?

A hard disk is just as reliable as a floppy disk, if not more so. With good treatment it should give many years of

working life. The main problem of with hard disks is that you have a lot of files instantly accessible for deletion or corruption, should you mistype a command or should a program go wild and out of control (and it will happen!). For this reason you should keep regular backups of all your important files (see below). You should also be wary of new and untried programs. Whenever I buy a new program, I always try it out first with the hard disk turned off. That way, if it does go wrong, it cannot corrupt the hard disk. The most likely 'dangerous' programs are those with copy protection. Occasionally software is programmed to erase disk if it thinks you have a pirated copy. In the case of a hard disk, it has plenty to play with.

ARE THERE ANY SPECIAL PRECAUTIONS OR MEASURES TO TAKE?

As I have mentioned above, a hard disk spins very fast, and the head flies just above the disk surface. Due to this, even the slightest knock while it is turned on could cause the head and disk to collide, thus destroying the disk. A hard disk should not be moved while it is turned on. When it is turned off, it is slightly more robust, and is suitable for gentle moving around the room. To make it as safe as possible, ready for transport to another building, you must 'park' the head. This is done with a (supplied) program called SHIP which moves the head to a safe landing zone on the disk, so that if it does get jolted no damage will be done.

The only other things to do are make regular backups, and look after your hard disk as you should other electronic equipment.

SHOULD I WAIT FOR THE BETTER VERSION?

If you hear of a better or cheaper version, you have to weigh up the factors. At present, the SH204 is reliable, fast and available. I have heard that a new version is coming out which has two DMA connectors so that they can be daisy-chained like the floppy disks (the ST supports seven DMA devices). While that is obviously a nice facility, to wait a few months (maybe stretching into several months) for it to appear is, in my opinion, folly. Buy now and you have a few months of hard disk use, and when you buy your second DMA device, buy the 'Y' adaptor that they will have to sell for those of us with only one connector.

HOW DO I BACK UP A HARD DISK?

All through this review, I have stressed the importance of making backups, but I have not mentioned how it can be done. Backing up a hard disk is a problem because if you have twenty megabytes of files, then you are going to need twenty 1Mb disks, or 40 ½Mb disks. Also you have the trouble of copying the directory, getting 'disk full' messages, and copying the rest onto another disk. Restoring the files to the hard disk is just as bad.

There are two answers, tape spoolers, and backup programs. Tape spoolers are DMA devices into which you put a magnetic tape capable of holding at least 20Mb of data. With appropriate instructions, the hard disk will start sending a complete copy of itself to the tape spooler, and after five minutes, the backup is done. Undoubtedly the fastest and best method, but it is not yet available on the Atari. Several companies are promising tape spoolers (they can be used for 'live' data storage too – but slow) but none have yet been launched. I think the number of hard disks sold must increase first. They are also expensive, often as much as the hard disk itself!

Backup programs help by organising the copying to or from floppies for you. In principle, you simply have to feed in floppy disks, while the program crams as much as possible onto each and then requests the next. An intelligent backup program uses a 'flag' set by TOS whenever a file is altered. When the backup program copies the file onto the floppy, it clears the flag. If you then change the file, TOS sets the flag and when you next do a backup, the program need only copy those with the flag set. Next issue I'll bring you a review of Microdeal's BACKUP program for more detail on what backup programs can do.

DO HARD DISKS DETERIORATE?

You've heard the rumour too, huh? That, when the hard disk is new it goes like the clappers, but after a few months it takes so long to create a new file that it seems like a floppy? Well the 'rumour' is true, it can happen. But not just to Atari hard disks, it can happen to all hard disks (IBMs too!). The reason is that when a hard disk is new, there is plenty of room, and nothing occupying it. Each new file is given fresh, consecutive, space on the disk which means it can be found and loaded easily. But, as time goes on, you start to delete files, and the next time you create a file, TOS fits it in the gap of the deleted one, and the next one goes half in the gap, and half into the so-far-unused section. And as this happens more and more, the whole disk becomes more and more fragmented. After months of this, you have to forgive TOS for not being able to find everything instantly, because the subdirectories become fragmented too. As an aside, some Disk Operating Systems, e.g. Acorn's DFS (sic) on the BBC, overcome this problem by not using the gaps caused by deletion. It just continuously allocates from the so-far-unused section. This means that while there may be 50k free on the disk, you cannot access it until you have done a 'squeeze' to move all the files into the gaps. Such a method may seem the answer, but practice shows it is 'problematic'.

There is no neat solution, but if you find that the response time is very slow, there is a way of fixing it. All you have to do is delete everything. This clears the disk so that it all starts consecutively again. To clear it quickly use the zero partition option of HDX. If you actually wanted the files you had on the disk, then either make a full backup, clear, then restore, or copy all the files over to another partition (with enough free room to take the files) and then copy them back after clearing. I have only one worry when I do that sort of thing, and that is that a file may become corrupted in the copy process and I thus lose it, but it hasn't happened yet.

The Atari SH204 Hard Disk Drive costs £599 plus VAT and is available from all Atari dealers.

NEXT ISSUE --

Microdeal's Hard Disk BACK UP utility. Taking the worry away?

DEGAS Elite

Can it turn Dave Keel from pavement artist to Picasso?

Not long after the ST computer was first launched (was it really almost one and a half years ago?) a marvellous multi-mode drawing program was released by the very well known and highly reputable Batteries Included (distributed by Ariolasoft in the U.K.). This program was Degas. It was certainly better than most other 8 bit drawing programs that anyone had seen, but we all knew that the ST was capable of much, much more. A few other such programs have since seen light of day, that do a little more than Degas did, but none have had all the features that we'd expect from a professional drawing and painting program on a 68000 based micro-computer. It has taken over a year to arrive, but Degas Elite has now become available and it's got almost every feature that you'd imagine and even one or two that you probably wouldn't.

For those readers who haven't seen the original Degas, then I'd suggest that you look at PAGE 6 Issue 20, where a full review was published. Naturally, Degas Elite has every single one of the features that Degas has (except for the high-resolution mode inverting bug, of course!) and many more besides.

The first noticeable difference is that the Degas Elite disk has to be booted. This loads in the GEM GDOS-VDI routine which allows more versatility over type font styles (e.g. outline, italic, half-tone etc. – just like the fonts in First Word and DB Master!) – you can then create an initial load up instruction file which tells the Degas Elite program which fonts you want to load (you can have up to 10 fonts resident at one time!), and from which drive etc. Talking of fonts, the original font editor is still there, and there's also a font converter program that enables you to convert all your existing Degas fonts into the GDOS-VDI format, thereby creating new variants of your old favourites. After you've booted the disk, you still have to select and run the actual program and it's then that you'll immediately notice the most obvious differences – the familiar boxes of the original Degas control screen are still there, but they're laid out a little differently, and in addition you also have a whole host of pull-down menus which enable you to select most of the new goodies that have been added.

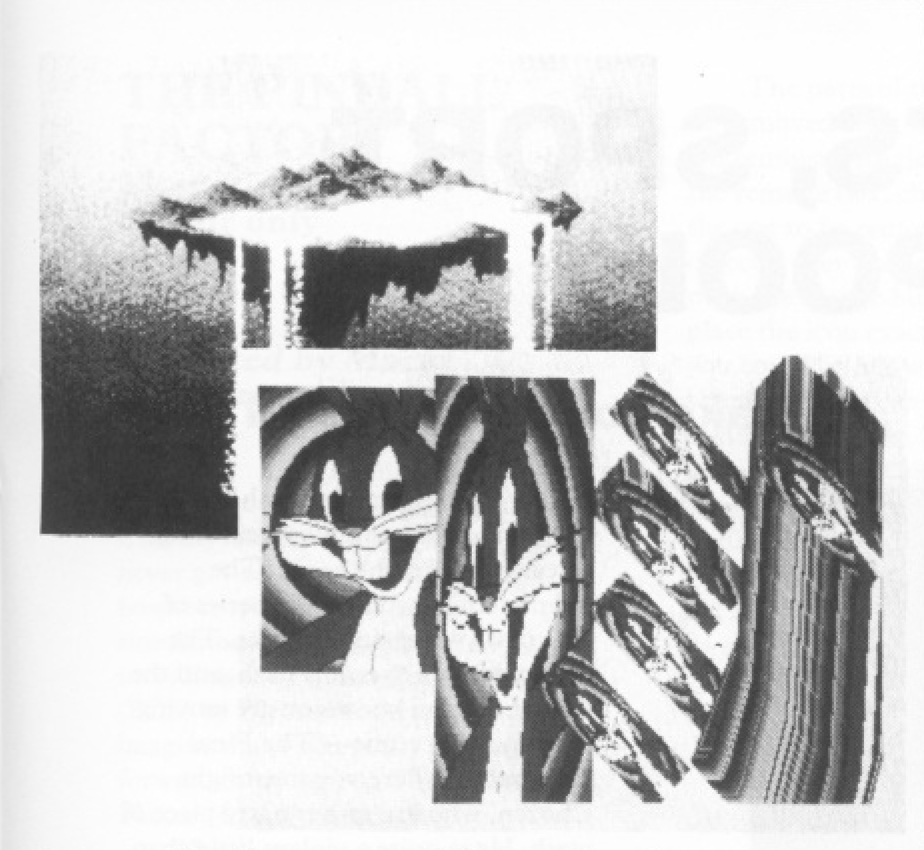
Take a deep breath and here goes. You can have up to 8 screens (on a one-meg ST, less on a 520 of course!) active at any time, and you can swap pictures or parts of pictures between any of these screens. You can load low or medium resolution colour pictures into high resolution screens (with very acceptable results) and vice-versa, and you can save your pictures to disk in a compressed format, usually around one-half to one-third of the usual 32K. You can automatically draw outlines around any area in any colour, and add shadows to shapes or text. You can load in Amiga files (whatever turns you on!) or 8-bit Atari Koala pad screens. You can load in images without their colour files or colour files without their images.

Extensive 'fill' design routines are incorporated, enabling you to create your own fills in either colour or monochrome, even allowing you to 'snatch' a suitably sized area of any screen and use that as a repeated fill. Animation has been incorporated (a feature that was sadly lacking in the original Degas), with many animation features enabling you to produce no end of amazing effects (although a bit of imagination and some considerable experimentation after careful study of the manual is essential). Thirteen printer driver routines are included on the master disk, so yours should be in there somewhere, and the very excellent and extensive manual gives you all the information that you'd need to write your own if it isn't included provided that you know a bit of machine code.

Just about all the graphics routines available can be obtained by either clicking on the appropriate selection box or by pressing the relevant keyboard key – another new idea. The very useful zoom mode is still there but now you can very quickly zoom in from 3 to 12 times size, and scroll around whilst in any zoom mode.

The most impressive, versatile and (to my mind) useful feature, however, is the 'block' mode. Remember in Degas how you could select any of the available 'brushes' and use them to draw lines, boxes, circles, ellipses and freehand draw etc.? – well, imagine that you can select any sized area of any picture, define it as a 'block' and then use it just like any other brush. Draw a circle with a carrot (for example!) or a box with the Mona Lisa's nose!. And once you've defined an area of screen as a 'block' then the fun really starts, because you can stretch it, shrink it, rotate it to any angle (in degrees!) that you like, horizontally or vertically 'lean' it, or even distort it to any abstract shape, and the blocks can be anything from 4 to 25 sides! The distort mode not only allows you to produce some weird and wonderful effects, but you can also use the distort to create true perspective – for example, you could produce a 3D cube with your design printed on all three visible sides, 'distorted' to the correct perspective to fit perfectly! For machine code 'hackers', the 'block' can also be saved to disk as an 'icon' file and used in your own programs.

I'm sure you'll have gathered by now that I'm impressed with Degas Elite. To balance the situation a little I



'every feature you'd imagine'

must report that my copy crashed several times after around one and a half hours use – although knowing the idiosyncrasies of the ST, and the non-legitimate mods I've made to mine, it could be the fault of my machine but somehow I don't think so. It may be that some of the pointers get mixed up after prolonged use and a lot of saving to disk. You wouldn't spend a long time on a masterpiece artistic creation and not save it to disk at least every 15 minutes would you?.

Other than that single doubt I can wholeheartedely recommend the program to anyone who takes their drawing seriously enough to spend around £70 on a program. Allowing for the ST's graphical limitations, the program is as near a 'professional' tool as it is possible to produce on an all-round machine. I know everyone is talking about (and probably waiting for) Mirrorsoft's 'Art Director', but remember that as far as I'm aware that only works in low-resolution mode, which makes it pretty unsuitable for any serious graphical work destined for a monochrome printer. That said, if you don't own a high resolution monochrome monitor, and aren't particular about medium resolution, then perhaps it would be an idea to wait for the cheaper 'Art Director' to see if it lives up to expectations and promises. However, if you're looking for a state-of-the-art 16 bit ST drawing program that works equally well in any of the ST's three graphics modes and takes a lot of the hard work out of any of the graphical ideas that you want to try, then you've found it!.

By the way, if you are an existing 'original Degas' owner, and you are wondering if you can 'trade-in' your disk for an upgrade to Degas Elite, don't bother trying, I've called Ariolasoft and it's not their policy. Seems a bit unfair to me, after all, the original Degas disk is totally redundant if you buy Degas Elite. •

Next issue we take a look at Art Director. First glance shows it to be every bit as good as Degas Elite, but is it any better? Plus a feature by feature comparison for you to judge for yourself.

MARTIAL ARTS, SPORT, PINBALL OR POOL?

take your pick, it's all here

KARATE KID II

Microdeal
£24.95

Reviewed by John Davison jnr

Microdeal's latest offering for the ST is a fine beat 'em up game with a few extras, including digitized graphics and sound effects.

The game is based on the film of the same name, and although I have not seen the film, I would imagine the plot is the same. The town where Myagi, the old man, was born has been taken over by a bunch of pretty mean looking bad guys, and you, playing the part of Daniel must fight your way past several different opponents and eventually get to the final encounter. Why you want to do this I am not entirely sure, as the instructions don't really tell you.

The first thing which you notice when the game has loaded is the excellent picture of Myagi and Daniel, on the title screen. This picture, I would imagine, is digitized as I seem to recall seeing the same picture on a film poster somewhere.

The first two scenes have you fighting against two of the 'tough guys', first Toshio and then Taro. These two fighters are experts in the martial art of karate, and on your first few goes with the game they will give you quite a beating! To wipe out a fighter you must hit him a certain number of times, gradually making his energy level decrease until eventually he falls over and can't get up again. The first two fights take place indoors, and the graphics here are extremely good. You are in a room, which has a tiled floor, there is an opening at the back of the room through which some beautiful scenery can be seen. This scene can be one of the following – Pagoda, Lake, Mountain, Sea port or Villa and Mountain. On the wall next to this opening there is always a delicate oriental illustration of some sort, for example a Dragon, an Elephant, a



Tiger, a Swallow, or a Fish, these illustrations have a lot of detail in them and add considerably to the general atmosphere of the game.

If you manage to defeat the first two fighters, you must go onto the 'concentration test'. Here you are magically transformed into a digitized picture of Myagi, and you must catch a fly with just a pair of chopsticks!!! Believe me, it is very difficult, but possible. If you succeed you receive a bonus, but even if you fail you will still go onto the next stage. You must again take on the two fighters, Toshio and Taro, but this time, in Myagi's ruined garden. Again the graphics are first class, and consist of ruined buildings on either side of a small grassy area. On the right hand side of the screen there is a small pool in which you can see reflections of the buildings. Toshio and Taro fight slightly more fiercely on this stage, but the level of difficulty is not significantly harder. So once you become a reasonable fighter it shouldn't be too difficult to bash these two guys about a bit, and get on to the next 'concentration test'. This test has you karate chopping sheets of ice! To do this you must build up Daniels concentration by 'waggling' the joystick, making a small drum in the top right hand corner beat faster and faster. Then when you push the button, Daniel will let out a blood curdling scream and smash the ice. The animation is made up of a series of digitized (yet again) pictures. The whole thing is over in a flash, and the next thing you know you are moving onto the next scene – 'The Final Encounter' where you must fight Chozen, who is a rather nasty piece of work. He is quite a violent little chap and it will take you a while to work out a way of beating him. The fight takes place at the castle of King Shohashi (bless you!), where the scene is really shadowy and spooky.

You fight as before until you have reduced his strength. Then, according to the manual, just as Daniel did, you must learn the secret of the drum, or die! Whenever I play it is always the latter!

When controlling your fighter, you have a choice of sixteen moves. These moves include the usual jumps, kicks, punches, etc, which you find in most karate games. Each move is accompanied with a very realistic scream or cry, which I would imagine is – yes, you guessed it – digitized.

The title screen and high score table have the music from the film playing in the background – 'The Glory of Love'. It is quite a good tune and it doesn't sound too bad considering the ST's mediocre sound chip. However if you are lucky enough to own a MIDI synthesiser, you can play the music through that. The program is set up for use with a CASIO CZ101 or compatible. but it should work with other synths.

My only niggle with Karate Kid II is that after playing it many times, and each time reaching the final encounter, it annoyed me intensely when I kept getting nobbled whilst trying to discover the 'secret of the drum'. On the whole this is an excellent beat 'em up game and in my opinion is far superior to Paradox's 'ST Karate' (reviewed Jan/Feb).

What is the secret of the drum? Answers on a postcard please!

THE PINBALL FACTORY

Microdeal
Colour only
£24.95

Reviewed by Mark Hutchinson

I have always had a great urge to treat myself to a pinball table but have never gotten around to it. I have however tried several pinball simulations on the 8-bit ATARI, including the Pinball Construction Set (PCS) by Electronic Arts, so you can imagine that I was really looking forward to trying out The Pinball Factory from Microdeal.

The program comes in the usual nicely illustrated box with a 14 page booklet. The instructions are plain and concise and the program is so easy to use that you will only read the instructions a couple of times. The disk contains only the Pinball program which includes a sample table but why this was not held in a separate file alludes me. I would guess that the writer was afraid the original file might have been overwritten or corrupted by the user. If so, good thinking! I saved the demo to a file to give me something to work with but take note – if you are saving a file and the disk is write protected, the program will not trap the error! This means that the disk will spin and that is all. You may think your program has been saved but it has not.

On booting the program, the screen is set to low resolution automatically (nicer than getting an error message and having to reboot) and an intro screen is shown for a few seconds before coming to the main menu. Here you can edit, play, load or save a game, erase a file or take a directory from any of three drives. This is done in a way I find preferable to the normal GEM directory window

Choosing to edit the game will bring you to another menu where you can edit the board or logo, alter the rules or test the game. The edit logo option gives you everything, having been spoilt by DEGAS, that you have come to accept as standard from a graphics package. Edit board is just as good, giving you the usual 16 colours, brushes, fills etc. It even includes a magnify mode for better detail and the ability to cycle fills backwards and forwards.

The parts of the pinball table can be removed all at once or separately. To remove a single item you must set the remove box, choose a part similar to the one to be removed, move the icon directly over the part on the board and push the mouse button. If you do not place the icon exactly over the part then you could be left with garbage on the screen. Or you can use the '!' box to remove each item. The item can be chosen by arrow keys that will cycle through the parts on the board. I much prefer the way Bill Budge used PMG (sprites) to move the icons on and off the PCS board, but I can live with this.



The board itself is a basic shape and, unlike PCS, cannot be altered directly, however, using brush and paint you can redesign the board. The colours are of two kinds, one that is invisible to the ball (for all those pretty pictures you want on the table) and those that the ball will see and interact with. The latter are used to paint in lanes and bumpers.

The game itself plays very well but, when you come to design your own, you must remember to play test it fully. You can change such things as gravity, bounce etc. With PCS there were certain areas where the ball would stick and these would have to be redesigned. The author of The Pinball Factory has thoughtfully included a 'tilt' option and this could be beneficial with such areas (conversely, with 'tilt', these areas could then become a 'feature' of your board).

The program includes all the usual board features, including ball traps to give multiple ball play. Normally when multiple balls are in play a program runs slow and can become exasperating, however I found no difference between single and multiple ball play with this program. Better programming techniques or just the power of the 68000?

I am pleased that I was able to try this program out. It does not take long to become conversant with all the options available, but it does take time and careful preparation of the board to yield good results – but that is true of most construction programs.

One option missing from this version is some sort of stand alone package. This was included with PCS and meant that pinball games could be placed in the public domain with the resulting free advertisement for the original construction program. The only problem is that this type of package tends not to have a dedicated algorithm (it must test for all options even when not on the board) and thus will run somewhat slower but this should not be much of a problem with the 68000. It might be worth contacting Microdeal to see if they intend to produce such a package in the near future, otherwise people might be tempted to copy the program itself in order to show their friends games they have designed.

My personal gripes are that I would prefer a higher resolution and a bigger table, plus the ability to have a sound select option. Taking everything into consideration (and the fact that I have condensed this review) I would still recommend this as a good buy for all pinball addicts. Besides which, you get an entry form for a design competition to win three prizes of £1000 each!

ARENA

Psygnosis
£29.95

Reviewed by John Davison jnr

If you shelled out nearly thirty pounds for a game then you would expect something excellent in return, right? Well I'm afraid Psygnosis forgot that people think like this when they wrote one of their latest games, ARENA. It is, basically, a Track 'n' Field type game with improved graphics which look superb if you see a colour screen shot of the game, but you might conclude that graphics are not everything if you actually watch the game in action.

The graphics *are* very flashy, and the game takes up a lot of memory (2 single sided disks), but so what? It is one of the most unplayable games around! For a start, you have to pound away at the keyboard to move your athlete!!! If this game used a joystick it would be a fierce waggler, but in this case, you are constantly afraid of ➡

beating several hundred pounds worth of keyboard to death!

The events in this game are – 100m Dash, Long Jump, High Jump, Shot Put, Javelin and Pole Vault. To complete a full game (which is a painful experience, especially for your keyboard!) you must complete each event, however, it is possible to have a go at just one or two events. Incidentally, in the Pole Vault, the pole appears to have shrunk in the wash somehow, and your athlete is probably longer than the pole. Stranger still the end of the pole does not even go into the ground!

The packaging, which by the way is the one of the best parts of the game, has all sorts of obscure statistics on it. Claims such as – "screen image scale 1 pixel = 1 inch" are believable as your character is very large and is quite impressive graphically. But "Average screen speed of character = 64 pixels/second" is a little bit of a weird claim, this means that your character moves the equivalent of five feet every second! This would be fine if the animation was smooth, but it isn't! The animation is some of the jerkiest I have yet seen in an ST game. One reviewer, however, has said that the game had animation "the most realistic you're likely to see this side of the Olympic Games." The reviewer in question and myself seem to have a small difference of opinion here!

Another complaint – when your athlete, or something you have thrown moves off the right hand side of the screen, there is no scrolling! I couldn't believe this. What actually happens is that your character disappears off the edge of one screen only to reappear on the left hand side of a new screen! I know the ST has no hardware scrolling capabilities, but it is possible through software. Just look at either Winter or World Games from Epyx.

Upon completing an event, a fat, strange looking official comes along and starts making insulting remarks about your athletic skills! These comments appear in speech bubbles and are quite a novel idea. At first they are quite amusing, but wear thin after a while, and unfortunately there is no facility to turn the damn things off! I also noticed that there were a few spelling mistakes.

Sound is practically non-existent, and what little there is, is not exactly awe-inspiring. The odd feeble sounding crack of the starters gun, and the pounding of your athletes trainers on the ground are the only sounds which I really noticed. As with a lot of British ST games there are not enough sound effects.

The game can be played by up to four players, each taking it in turn to batter the keyboard to an even earlier grave. A four player game could be fun, but the game doesn't have a high playability rating, so the attraction wears off after the first two events.

This could have been an excellent game if it used a joystick, the animation was smoother, there were scrolling backgrounds, better sound effects, and perhaps even a bit of music. All I can say is, save your thirty pounds and wait. Maybe Psygnosis will bring out something better!

COLOURSPACE

written by Jeff Minter
Llamasoft
£19.95

Reviewed by John Davison jnr

Those of you who have been to the Atari User shows will undoubtedly have seen this amazing piece of software in action on the Llamasoft stand being used by its author, Jeff Minter, to create fantastic graphical effects in time to loud rock music.

It is billed as a 'light synthesiser' and this is probably the best name for it as it does not really fit into any standard category of software. It is not really a game, even though it is 'played', and I guess if you had to categorise it, you would call it a 'creative tool'.

The manual, which is excellent, explains how to get started in a very different way to normal programs – 'Fire up the stereo, reduce the amount of ambient photons in your vicinity (turn off the light), grasp the mouse firmly and waggle it about a bit.' It then goes on to tell you about the really 'zowie' effects that you will be able to create!

The program has a staggering number of different commands available, over one hundred!!! However, daunting as this may sound, it is a very easy program to use. To start with, I put some very loud music on the stereo, and pushed f1 on the ST keyboard. The disk drive started to whirr and two golden coloured shapes appeared at the bottom of the screen. Hmm, strange, I wonder what they could be? I pressed one of the keys on the numeric keypad which change the colour palette and the two golden shapes turned into two large, bald heads (you must have seen the advert on the back of the magazine!), which to be quite honest, are pretty amazing if the room is in total darkness! I then waggled the mouse about a bit, as instructed, and held down the left mouse button. The resulting effect was stunning! The fine lines of the ST's low-resolution mode had beautiful colours flowing through them. I consulted the 'Colourspace command summary' sheet and decided that the pattern on the screen would look pretty good in a different symmetry mode, so I pushed 'N' on the keyboard, which is 'Spiral Symmetry'. The result was nothing short of brilliant. The graphics were reflected in four ways, and when I moved the mouse with the left button pressed, the graphics moved around the centre of the screen in a 'spiral' pattern (hence the name).It is a fantastic effect which is well suited to slow pieces of music (such as 'Brothers in Arms' by Dire Straits). I continued to fiddle with the program, and before I knew it I had spent several hours with the thing!

Well, enough of my praise, I'd better tell you a bit more about the program itself. The program uses the ST's 320x200 mode, and is controlled by the mouse and keyboard. It is possible to load in NEOchrome files as either foregrounds or backgrounds for your light show. There are six different forms of symmetry including X, Y, X/Y, Quad, Spiral and Augmented, or you can select to have no symmetry at all. What do these symmetry modes do? Well, you control a basic light form shape, and when a symmetry mode is activated the light form is reflected to other parts of the screen. This then moves in the same way as the lightform you are controlling, making the patterns on the screen look symmetrical. You can also have starfields, either coming outwards from the centre of the screen or moving left to right and up and down. You can also implement a gravity routine which pulls the graphical effects downwards.

It is possible to record shows which have been created specially for particular pieces of music, these can be played back at a later date without having to touch the controls. You can also define your own 'presets' which include things such as colour palettes, lightform shapes and which symmetry mode is enabled etc.

This program is spectacular! I haven't met anyone yet who doesn't like it! It is an ideal performance tool,

and it will go down well at parties, or at disco's (it would look fantastic using a projector telly at a disco). The author, Jeff Minter has already displayed it in various different ways, even at the London Planetarium!!! Whatever your use for this program, it will bring you hours of enjoyment. But watch out, Colourspace II is coming, all you 1 meg ST owners are going to be in for an even bigger treat!

WORLD GAMES
Epyx Software/U.S. Gold
£24.95

Reviewed by John Davison jnr

Not another sports simulation from Epyx? Yes, we now have World Games which is the fourth and most recent in the Epyx 'Games' series, and is the second to be made available on the Atari ST.

There are eight events altogether, each requiring a strong and sturdy joystick and quick reactions. To become a World Games champion, you must wrestle with a four hundred pound Japanese Sumo wrestler, toss a caber in bonnie Scotland, fly over a row of barrels on ice in Germany, throw yourself off a cliff in Acapulco, Mexico, hurtle down a snow covered mountain through a slalom course in Chamonix, France, lift an enormous lump of iron above your head in the Soviet Union and roll a log in the middle of a lake in Canada. Good mixture eh? Each event is a completely different concept, so I'll take you through them one by one.

The Sumo wrestling loads with an excellent oriental tune playing in the background. You the find yourself in a Sumo wrestling ring, with lanterns hanging from the ceiling and a pretty mean looking human blubber ball standing a few feet away from you! The graphics in this event are extremely good. They are very clear, and the wrestlers have an almost cartoon quality about them. The colours are very realistic, as is the animation. You have twelve moves to choose from, including an Utchari (what the heck is an Utchari?).

The caber tossing is also quite impressive, if a little difficult. Whilst the event is loading the tune which plays along in the background sounds very much like bagpipes, but more like Northumbrian pipes than Scottish. However the effect is still good. Basically, all you have to do is to throw a telegraph pole further than anyone else (all you have to do!!?) If that sounds difficult, I can assure you that it is!!!

The barrel jumping involves high speed skating on a frozen lake, and jumping over a row of barrels. The event is highly playable, and the graphics and sound are very good. There are many nice touches in this event, such as if you fail and fall through the ice, your face turns blue!

The cliff diving has you leaping off the 'La Quebrada' cliff in Acapulco, Mexico. As a courageous diver, you must launch yourself from a craggy ledge towards the crashing surf below. The graphics are very good, although the scrolling as you plummet towards the shallow waters is a little flickery.

Bull riding, the most dangerous event in rodeo, has you riding a violent, angry bull bareback, with only a puny bit of rope to hang on to! The graphics and animation are (again) very, very good, and the playability is high. The controls, however, are a little difficult to master, but once you get used to them you'll be riding the mighty 'Earthquake' within a few goes!

The slalom ski-ing is a straightforward 'get through the gates as fast as you can' type game which you used to get on the Atari VCS machines years ago. What makes the World Games version different are the marvellous graphics and ultra smooth scrolling. In fact it has some of the smoothest I have ever seen on an ST.

The weight lifting takes you to the Soviet Union, home of the best Olympic lifters in the world. You have to complete two different kinds of lift. The 'snatch' and the 'clean and jerk' both require crucial timing and skill. The graphics yet again (I'm getting fed up of saying this) are great. The animation is first class, as are the sound effects, as your lifter breathes deeply before lifting the weight. These sounds add greatly to the realism of the event.

Finally the Log Rolling, in Canada. This is a very amusing event which plays Monty Pythons 'I'm a Lumberjack' as it is loading. You and your opponent must balance on a large log floating in the middle of a lake. Your aim is to roll the log with your feet in such a way that your opponent is thrown off balance and off the log. He, of course, is trying to do the same to you. However, there is a slight problem when playing against the computer. It would appear that he is an expert log roller, and to start with he will always beat you. Also, are there really sharks swimming about in Canadian lakes???

When loading an event you can choose whether or not to have the 'Travelogue' feature activated. This feature tells you all about the event before it loads. It is a nice touch, but I found myself turning it off after a few goes, as it 'gets in the way'.

World Games is done in the standard Epyx sport simulation format, allowing up to eight people to play, representing any of eighteen countries, and, as with the other 'Games' you can choose whether to compete or practice in an event. The graphics, right through from the title screen to the backdrops on each event, are excellent, and the animation, in all the events, is superb, with music and sound effects of equal quality. This is yet another classic game from Epyx, and I can confidently recommend it to anyone.

ELECTRONIC POOL
Microdeal
£19.95

Reviewed by Les Ellingham

It's hard to write a long review on a game that is so simple and straightforward to play as this one but don't make the mistake of thinking that simple means 'no good'. One of the joys of this game is that you can boot it up and play without any complicated manual reading. Occasionally it's nice to be able to play a game without needing a degree to understand it!

Electronic Pool is just that – an overhead view of a pool table with cue and object balls. Place a cursor on the object ball, set the power bar at the top of the screen and cue away. With just a little practice you will will be potting those balls. You may play solo or with another player with up to 8 games in a session. Points are scored for each ball potted with the scores of each pocket rotating as the game is played so that the easiest shot is not always the best to go for. As a solo game there is a high score table to judge your improvement.

The animation is smooth, the sound effects and graphics are good and the game is easy to play. A nice one for the end of the day when you want a nice relaxing game that will retain your interest without taxing your brain too much! •

MAKE YOUR DEGAS SLIDE SHOWS EVEN BETTER

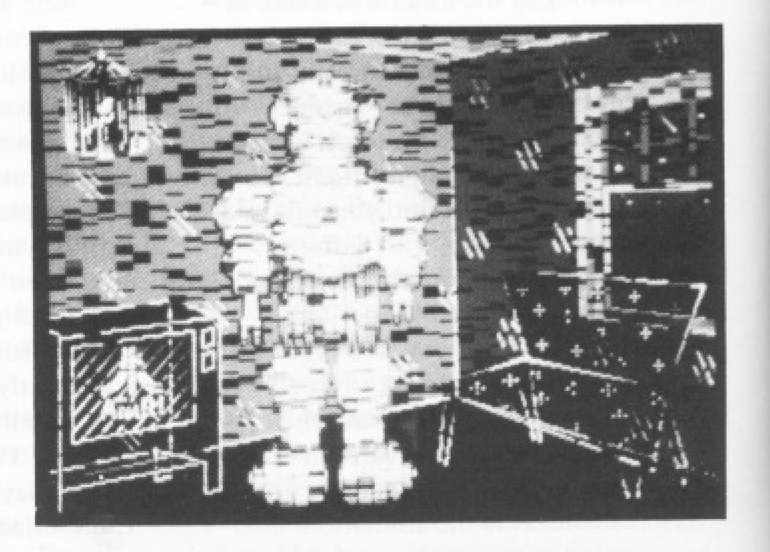
FADER

A machine code program created from Basic by Paul Lay

Degas Fading Slideshow provides a continuous slideshow of all Degas format pictures on a disk fading each into view in a similar manner to several such programs available for the Atari 8-bit systems.

The program will automatically select only those pictures that correspond with the resolution in which the program is run provided that the standard DEGAS extenders are used. If there are no files on the disk that match the screen resolution the program will return to the desktop otherwise it will display all pictures in a continuous loop.

The main listing can be typed in using ST BASIC and will generate the appropriate object code which can be run in the normal way. For those who wish to delve more deeply the Assembler source code is also given. This is quite useful as it shows that quite complex operations, such as file processing, are made easy by the GEMDOS, BIOS and XBIOS routines.



Note: FADER will only run with 512k machines. Owners of 1 Meg machines should first run MAK512.TOS or a similar program available in the public domain from your local user group or from PAGE 6.

```
10   rem **************************************************
20   rem *                                                *
30   rem *           Degas Fading Slide Show              *
40   rem *                 By Paul Lay                    *
50   rem *                                                *
60   rem **************************************************
70   fullw 2: clearw 2: gotoxy 0,0
80   ? " Degas Fading Slide Show": ? " By Paul Lay": ?
90   ? " Insert destination disk & hit any key";
100  key$=input$(1): ?: ?: ? " *** Creating file 'a:fader.prg'"
110  on error goto 210
120  open "R", #1, "a:fader.prg", 1
130  field #1, 1 as byte$
140  on error goto 220
150  checksum%=0: for rec%=1 to 463
160  read code%: checksum%=checksum%+code%
170  lset byte$=chr$(code%): put #1,rec%
180  next rec%: close #1
190  if checksum%<>26660 then 220
200  ? " *** Creation successful": end
210  ? " *** Error opening file": end
220  ? " *** Error in data statements": end
230  data 96 , 26 , 0 , 0 , 1 , 168 , 0 , 0
240  data 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
250  data 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
260  data 0 , 0 , 0 , 0 , 42 , 79 , 46 , 124
270  data 0 , 6 , 128 , 0 , 42 , 109 , 0 , 4
280  data 32 , 45 , 0 , 12 , 208 , 173 , 0 , 20
290  data 208 , 173 , 0 , 28 , 6 , 128 , 0 , 0
300  data 1 , 0 , 47 , 0 , 47 , 13 , 63 , 60
310  data 0 , 0 , 63 , 60 , 0 , 74 , 78 , 65
320  data 223 , 252 , 0 , 0 , 0 , 12 , 63 , 60
330  data 0 , 6 , 63 , 60 , 0 , 26 , 78 , 78
340  data 88 , 143 , 63 , 60 , 0 , 4 , 78 , 78
350  data 84 , 143 , 209 , 57 , 0 , 0 , 1 , 122
360  data 47 , 60 , 0 , 0 , 1 , 124 , 63 , 60
370  data 0 , 26 , 78 , 65 , 92 , 143 , 63 , 60
380  data 0 , 0 , 47 , 60 , 0 , 0 , 1 , 118
390  data 63 , 60 , 0 , 78 , 78 , 65 , 80 , 143
400  data 74 , 64 , 102 , 0 , 0 , 130 , 63 , 60
410  data 0 , 0 , 47 , 60 , 0 , 0 , 1 , 154
420  data 63 , 60 , 0 , 61 , 78 , 65 , 80 , 143
430  data 51 , 192 , 0 , 0 , 1 , 116 , 47 , 60
440  data 0 , 6 , 255 , 222 , 47 , 60 , 0 , 0
450  data 125 , 34 , 63 , 57 , 0 , 0 , 1 , 116
460  data 63 , 60 , 0 , 63 , 78 , 65 , 223 , 252
470  data 0 , 0 , 0 , 12 , 63 , 57 , 0 , 0
480  data 1 , 116 , 63 , 60 , 0 , 62 , 78 , 65
490  data 88 , 143 , 63 , 60 , 0 , 37 , 78 , 78
500  data 84 , 143 , 97 , 0 , 0 , 156 , 47 , 60
510  data 0 , 6 , 255 , 224 , 63 , 60 , 0 , 6
520  data 78 , 78 , 92 , 143 , 97 , 50 , 60 , 60
530  data 1 , 0 , 63 , 60 , 0 , 37 , 78 , 78
540  data 84 , 143 , 81 , 206 , 255 , 246 , 63 , 60
550  data 0 , 79 , 78 , 65 , 84 , 143 , 74 , 64
560  data 103 , 132 , 102 , 0 , 255 , 92 , 63 , 60
570  data 0 , 6 , 63 , 60 , 0 , 27 , 78 , 78
580  data 88 , 143 , 63 , 60 , 0 , 0 , 78 , 65
590  data 60 , 60 , 127 , 255 , 63 , 60 , 0 , 17
600  data 78 , 78 , 84 , 143 , 2 , 64 , 127 , 255
610  data 32 , 124 , 0 , 7 , 0 , 0 , 34 , 124
620  data 0 , 7 , 128 , 0 , 50 , 60 , 0 , 4
630  data 19 , 176 , 0 , 0 , 0 , 0 , 6 , 128
640  data 0 , 0 , 0 , 80 , 2 , 128 , 0 , 0
650  data 127 , 255 , 81 , 201 , 255 , 236 , 81 , 206
660  data 255 , 204 , 48 , 60 , 7 , 255 , 32 , 124
670  data 0 , 7 , 0 , 0 , 34 , 124 , 0 , 7
680  data 128 , 0 , 34 , 216 , 34 , 216 , 34 , 216
690  data 34 , 216 , 81 , 200 , 255 , 246 , 78 , 117
700  data 48 , 60 , 7 , 255 , 32 , 124 , 0 , 7
710  data 128 , 0 , 66 , 152 , 66 , 152 , 66 , 152
720  data 66 , 152 , 81 , 200 , 255 , 246 , 78 , 117
730  data 0 , 0 , 42 , 46 , 80 , 73 , 49 , 0
740  data 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
750  data 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
760  data 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
770  data 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
780  data 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
790  data 0 , 0 , 0 , 0 , 0 , 0 , 0 , 72
800  data 6 , 18 , 24 , 14 , 18 , 18 , 0
```

```
; ***********************************************************************
; *
; * Degas Fading Slide Show Program
; *
; * By Paul Lay, (C) 1986
; *
; ***********************************************************************

; ***********************************************************************
; *
; * Equates
; *
; ***********************************************************************

gemdos          equu            $01             ; gemdos trap vector & codes
term            equ             $00
setdta          equ             $1A
open            equ             $3D
close           equ             $3E
read            equ             $3F
setblock        equ             $4A
sfirst          equ             $4E
snext           equ             $4F

xbios           equ             $0E             ; xbios trap vector & codes
getrez          equ             $04
setpalette      equ             $06
random          equ             $11
jdisint         equ             $1A
jenabint        equ             $1B
wvbl            equ             $25

scrn_mmry       equ             $78000          ; actually displayed
scrn_bffr       equ             $70000          ; buffer area
scrn_load       equ             scrn_bffr-$22
scrn_palette    equ             scrn_load+$02

; ***********************************************************************
; *
; * Program
; *
; ***********************************************************************

start
        move.l      SP,A5                   ; reserve appropriate memory
        move.l      #$68000,SP              ; initialize stack
        move.l      4(A5),A5
        move.l      $0C(A5),D0
        add.l       $14(A5),D0
        add.l       $1C(A5),D0
        add.l       #$100,D0
        move.l      D0,-(SP)
        move.l      A5,-(SP)
        move.w      #$00,-(SP)
        move.w      #setblock,-(SP)
        trap        #gemdos
        add.l       #$0C,SP

        move.w      #$06,-(SP)              ; disable keyboard & midi ACIAs
        move.w      #jdisint,-(SP)
        trap        #xbios
        addq.l      #$04,SP

        move.w      #getrez,-(SP)           ; enquire screen resolution
        trap        #xbios
        addq.l      #$02,SP
        add.b       D0,file_name+$04        ; set filename extender

first_file_loop
        move.l      #dta,-(SP)              ; search for first file
        move.w      #setdta,-(SP)
        trap        #gemdos
        addq.l      #$06,SP

        move.w      #$00,-(SP)              ; normal attributes
        move.l      #file_name,-(SP)
        move.w      #sfirst,-(SP)
        trap        #gemdos
        addq.l      #$08,SP
        tst.w       D0                      ; check file found
        bne.l       no_files

next_file_loop
        move.w      #$00,-(SP)              ; open file for reading
        move.l      #dta+$1E,-(SP)
        move.w      #open,-(SP)
        trap        #gemdos
        addq.l      #$08,SP
        move.w      D0,handle

        move.l      #scrn_load,-(SP)        ; read in file
        move.l      #$7D22,-(SP)
        move.w      handle,-(SP)
        move.w      #read,-(SP)
        trap        #gemdos
        add.l       #$0C,SP

        move.w      handle,-(SP)            ; close file
        move.w      #close,-(SP)
        trap        #gemdos
        addq.l      #$04,SP

        move.w      #wvbl,-(SP)             ; wait for VBL
        trap        #xbios
        addq.l      #$02,SP

        bsr         clear_screen            ; clear the screen

        move.l      #scrn_palette,-(SP)     ; set colour palette
        move.w      #setpalette,-(SP)
        trap        #xbios
        addq.l      #$06,SP

        bsr.s       fade_in                 ; fade in buffered picture

        move.w      #$100,D6                ; viewing delay
delay
        move.w      #wvbl,-(SP)
        trap        #xbios
        addq.l      #$02,SP
        dbra        D6,delay

        move.w      #snext,-(SP)            ; attempt to get next file
        trap        #gemdos
        addq.l      #$02,SP
        tst.w       D0
        beq.s       next_file_loop
        bne.l       first_file_loop         ; otherwise start again

no_files
        move.w      #$06,-(SP)              ; enable keyboard & midi ACIAs
        move.w      #jenabint,-(SP)
        trap        #xbios
        addq.l      #$04,SP

        move.w      #term,-(SP)             ; terminate program
        trap        #gemdos

; ***********************************************************************
; *
; * Fade in buffered picture
; *
; ***********************************************************************

fade_in
        move.w      #$7FFF,D6

fade_loop
        move.w      #random,-(SP)           ; request random number
        trap        #xbios
        addq.l      #$02,SP
        and.w       #$7FFF,D0
        move.l      #scrn_bffr,A0
        move.l      #scrn_mmry,A1
        move.w      #$04,D1

update_loop
        move.b      $00(A0,D0.w),$00(A1,D0.w)
        add.l       #$50,D0
        and.l       #$7FFF,D0
        dbra        D1,update_loop
        dbra        D6,fade_loop

        move.w      #$7EF,D0                ; copy picture
        move.l      #scrn_bffr,A0
        move.l      #scrn_mmry,A1

copy_loop
        move.l      (A0)+,(A1)+
        move.l      (A0)+,(A1)+
        move.l      (A0)+,(A1)+
        move.l      (A0)+,(A1)+
        dbra        D0,copy_loop
        rts

; ***********************************************************************
; *
; * Clear the screen
; *
; ***********************************************************************

clear_screen
        move.w      #$7FF,D0                ; clear the screen
        move.l      #scrn_mmry,A0

cls_loop
        clr.l       (A0)+
        clr.l       (A0)+
        clr.l       (A0)+
        clr.l       (A0)+
        dbra        D0,cls_loop
        rts

; ***********************************************************************
; *
; * Variables
; *
; ***********************************************************************

handle
        ds.w        $01

file_name
        dc.b        '*.PI1',$00

dta
        ds.b        $2C

; ***********************************************************************
; *
; * The end
; *
; ***********************************************************************

        end
```



LET'S MAKE ....
LOTS OF PRINTED THINGS!

Owners of 8-bit systems who also have access to a printer must surely know about Print Shop and its accessories (reviewed in issue 20) which must be one of the most useful applications programs for the ordinary home user. If you have not seen that program before, what it briefly enables you to do is print out your own custom stationery, greetings cards, posters, banners and calendars. Shortly after the ST came out a Print Shop clone appeared called Printmaster which was basically Print Shop only a little more sophisticated. A must for any ex-8 bit Print Shop owners but it was recently withdrawn due to legal action from Broderbund and with Broderbund failing to release Print Shop in ST format it looked like ST owners would have to forego the joys of home printing.

Then, suddenly, along came a series of budget price software (only £9.95!) called Let's Make .. Greeting Cards, Calendars and Stationery and Signs & Banners. Three separate programs with two additional Art Library disks also at £9.95 each. You've guessed it, clones of Printmaster! The series is basically Printmaster broken down into separate disks which makes it an excellent way to get into home printing. One of the problems with the original Print Shop was that it was quite expensive and most people used only one or two of the modules. Now you can choose just what you want. Each disk supports a whole host of printers and is so simple to use that you really don't need any sort of manual (though you do get a brief manual with each disk).

If you have a printer, or intend getting one, these programs come highly recommended at £9.95 each and will put your printer to excellent use. Buy them now before Broderbund find out!

CALENDARS & STATIONERY

Print out three types of calendar, either a full month, a weekly day to a line calendar or a weekly open format to enter your own dates. Your own choice of graphics go at the top and you choose the font style for the month and year. Short reminder notes can be entered on any day.

Letterheadings can be created in a variety of ways with different graphics at the top and, optionally, bottom. Fonts can be selected for the main heading, though not the address lines, and for the bottom if required.

January 1987

SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19 Copy Date	20	21	22	23 Final Copy	24
25	26	27	28	29	30	31

January 1987

Sunday 11	
Monday 12	
Tuesday 13	PICK JACKET UP FROM CLEANERS
Wednesday 14	
Thursday 15	
Friday 16	PAY DAY
Saturday 17	HAPPY BIRTHDAY



SIGNS & BANNERS

Signs come as A4 size posters which you create to your own design using graphics in small, medium or large size. The size of graphic determines the number available on each poster. Text is overlaid in a font of your choosing with several styles available in each font. Although the layout is not free-form (you must select from pre-defined positions) a huge variety of signs can be made for almost any occasion.

Banners are long signs, printed sideways on continuous paper with all the usual choices of graphics and text. How long depends on what you want to say!

GREETINGS CARDS

Greetings cards are cleverly printed on A4 size paper so that they can be folded to quarter A4 size with a design both on the front and inside of the card. Cards are a little more complex but are really quite easy as are all of the modules. Every program in the series gives you a preview before printing and this is especially useful for the Greetings Cards. You can also step back through each step of the design procedure using the ESC key until you get just what you want. When you get a good design you can save it to disk.

reviewed by Les Ellingham

ART LIBRARIES

Two additional disks are available each containing 75 new graphics elements for use with any of the main programs so you need never be stuck for inspiration!

The Let's Make series is available from Software Express in Birmingham who kindly supplied the review copies. •

THE BEST OF BASIC

by David Wrenn

For the past four years I have owned an Atari computer. When I first got my Atari, I didn't know anything about computers and it wasn't until much later that I began to suspect, from reading ANTIC, ANALOG and COMPUTE! magazines, that I had something really special. Then came the people at the computer store who specialised in Atari (yes, there really was such a thing!) and the gang at the monthly Atari computer club meetings. Now I could walk into any computer store and be cocky in the knowledge that my computer was as good as anything they had to offer.

Now I own an ST. I am not the slightest bit sorry for having had to junk my 8-bit system but it would have been nice to have the best of both worlds. When I got my ST, one of the first things I did was to sit down and thumb through the BASIC manual. I was delighted to find dozens of things that I did not understand. Now I don't mean that the manual is poorly written (it is) and I don't mean that there are not enough examples (there aren't). What I do mean is that there are loads of new commands, graphics, string manipulation, file manipulation, built-in debugging tools – you name it! I was ecstatic! So I booted up the disk, anxious to get started solving those mysteries one by one when what do you suppose I saw? Well, at first I wasn't too sure what I was looking at. All these little windows started popping up all over the screen. Some of them popped up only to be covered up by other little windows. I kind of felt sorry for the covered up ones. I mean, what did they even pop up for in the first place?

Was I discouraged? Heck no! I plunged into ST BASIC with all the fervour with which I had tackled ATARI BASIC four years earlier. This lasted for approximately five minutes. It took me that long to realise that ST BASIC is a mess! Since then, my opinion has been verified by numerous authors in the Atari magazines. Jim Luczak, writing in ANALOG magazine, says that, along with several other minor bugs, he discovered that when attempting to save a program larger than about 10K, using SAVE AS/REPLACE, ST BASIC will erase any previous copy with the same filename and then promptly lock up. If you do not have another copy of the program, either with a different filename or on another disk, you are just out of luck!

O.K., so ST BASIC is awful. At least the screen editor is awful. Now what?

As I see it, we have a choice. We can sit around idle and wait for a better BASIC (or a better version of the original), we can use the time to learn another language like C or Assembly or we can make the best of a bad situation and start using ST BASIC.

If you choose the latter option, as I have, I have some good news for you. Type in the following listing and save it to disk under the name SETUP.BAS

```
10 poke systab+2,1
20 clearw 0:fullw 0
```

Unless you are writing a program that will be run in low resolution, boot up BASIC in medium resolution. This will allow you to see more of your listing in the EDIT window. After booting BASIC, run SETUP. This will clear the EDIT window and open it to a full screen. It also causes the editor not to show the line being edited in that nearly unreadable infernal grey font. Instead, the line is not affected at all. Try poking SYSTAB+2 with any number between 0 and 32. You'll be surprised at the results you get.

Also, when programming, always use the EDIT window. There are a few things that cannot be done from the EDIT window but, for the most part the EDIT window may be used in much the same way as the full screen in ATARI BASIC. Try to forget that you are in a stupid window at all and just program away!

Atari has announced that a revised version of ST BASIC is in the works. There is no word yet on when to expect it or exactly what the improvements will be, but the word is that windows will still be implemented in much the same way as they are now. Until things improve, hang in there and DO IT IN BASIC! Until then I leave you with this little program which will produce mailing labels on any printer. I hope you find it useful.

```
10    OPENW 2:FULLW 2:CLEARW 2
20    gotoxy 10,1:print "LABEL MAKER  by
   David R. Wrenn"
30    gotoxy 10,2:print "================
   =============="
40    ? :? :? :? :print "HOW MANY LINES F
   OR LABEL";:INPUT LIN
45    CLEARW 2:GOTOXY 0,5:FOR L=1 TO LIN
50    PRINT "TYPE LINE #";L;:INPUT TXT$(L
   )
60    NEXT L
70    CLEARW 2
80    GOTOXY 0,1:? "YOU TYPED:":?:FOR L=1
    TO LIN:? TXT$(L):NEXT L:?
90    INPUT "IS THAT CORRECT (Y/N)";A$
100   IF A$<>"Y" AND A$<>"y" THEN 45
110   ? :? :INPUT "HOW MANY LABELS";N
113   ? :? :PRINT "ENTER 1 FOR I INCH LAB
   ELS
115   INPUT "ENTER 2 FOR ONE AND ONE HALF
    INCH LABELS";SIZE
117   IF SIZE > 2 OR SIZE <1 THEN 113
120   CLEARW 2:GOTOXY 0,5:PRINT "POSITION
    LABELS,
130   INPUT "PUT PRINTER ON LINE AND PRES
   S RETURN";A$
143   IF SIZE=2 THEN SPACE=8 ELSE SPACE=6
145   FOR NOLAB=1 TO N
150   FOR L=1 TO LIN :LPRINT TXT$(L):NEXT
    L
160   FOR SPAC =1 TO 1+(SPACE-LIN) :LPRIN
   T:NEXT SPAC
170   NEXT NOLAB
180   CLEARW 2:GOTOXY 0,1:INPUT "MORE (Y/
   N)";A$
190   IF A$<>"Y" AND A$<>"y" THEN STOP
200   INPUT "SAME LABEL (Y/N)";A$
210   IF A$<>"Y" AND A$<>"y" THEN 40
220   GOTO 110
```

This article first appeared in POKEY PRESS, the newsletter of the Atari Computer Club of the Palm Beaches, 15545 S.W. 151th Street, Indiantown, FL 33456, U.S.A.

AN IDEAL BASIC?

Allan Knopp takes a look at Computer Concepts' FAST BASIC

I like Basic, it is a friendly language. Unlike compiled languages it is possible to experiment and see the result immediately. Basic does however have some disadvantages. There is the rather sedate pace at which it goes about its business and, on the ST, a lack of easy access to the useful functions of GEM.

When I got an ST, I expected the bundled ST Basic to run appreciably faster than the 8 bit version. Unfortunately, although there is an increase in speed over 8 bit Basic, this doesn't seem to reflect the superiority of the hardware.

I won't dwell on the faults of ST Basic, but I think it is sufficient to say that it is just not as good as it could (should?) be.

AN IDEAL BASIC?

After using ST Basic for a couple of months I had a mental list of what would make, in my opinion, an ideal Basic for the ST.

- It should make full use of the hardware and be very fast.
- It should have a better screen editor than the cumbersome ST Basic editor, I find all those windows just get in the way.
- It should give easy access to GEM functions.
- It should come on a cartridge to leave the maximum of memory free, and to make loading faster.

Computer Concepts have now released Fast Basic, which I think comes pretty close to being my ideal Basic for the ST. It comes on a cartridge which plugs into the ST's cartridge port and can be left permanently in place. Packaged with the cartridge is a comprehensive manual, a quick reference card and a set of demonstration programs and utilities on disk. All very comprehensive. Let's take a look at what you can expect.

THE SCREEN EDITOR

The screen editor makes sensible use of windows. It has two windows on screen at boot-up, the input window and output window. Also available is an immediate mode window which can be opened by clicking on the appropriate menu item.

There are four font sizes available for use while programming. There is also a pretty full set of word processing facilities such as search & replace and cut & paste, all of which make editing a program a much simpler task. It is possible to load ST Basic programs into Fast Basic. Some of course won't work without almost re-writing them but some of the simpler ST Basic programs only need minor changes. Using the search & replace function greatly simplifies this operation. I have done this with several ST Basic programs and found that the programs ran about six times as fast when converted to Fast Basic. I should stress that this wasn't intended to be a proper test of the speed of Fast Basic but it certainly gives an indication of what might be achieved.

STRUCTURE

Fast Basic seems quite close to BBC Basic in general syntax, it makes use of procedures, and a generally structured style of programming is encouraged.

Line numbers are optional, but they are really only used as labels. It is still possible to GOSUB or GOTO a line number, but it is preferable to write around named subroutines or procedures. Having used 8 bit Atari Basic for some time I was surprised to find how easy it is to program in this way. It makes a program much more readable and easier to change and develop.

KEYWORDS

There are all the usual keywords that you would expect from any good version of Basic and, in addition, there are a large number of extra keywords which are specific to the ST. It is rather strange though that with approximately two hundred and fifty keywords, plus more than sixty GEM commands, there are only three sound commands. One of these is BEEP which gives a bell sound. The others are DOSOUND and SNDREG which both seem difficult to understand and there is not sufficient information in the manual about them nor any examples on the demo disk. I am sure that some good sound can be produced, but compared with the comprehensive range of other keywords it seems that sound has been more than a little neglected.

GRAPHICS

Fast Basic is packed with graphics functions. All the normal graphics commands – LINE, CIRCLE, FILL etc. are supported. Additionally there are a multitude of commands which, as far as I can tell, cover every possible requirement. For example blocks of screen memory can be manipulated using the GRAB, PUT and BLIT commands. Page flipping is easily implemented using the PHYSBASE and LOGBASE pseudo variables. GEM is also comprehensively supported.

Every GEM function that you are ever likely to require is available. Most of the GEM commands are simple to use. For example drop-down menus and alert boxes are very easy to implement. It is possible to produce very professional looking GEM based programs with a minimum of programming.

ASSEMBLER

Fast Basic comes with a built-in assembler which can be accessed from within a Basic program. Basic and assembly language can be used together in the same program and the code for both languages annears in the same file.

PROGRAM SEGMENTS

It is possible to have up to ten programs in memory at the same time. Fast Basic divides the memory into segments, putting one program into each segment. Each program can be edited and run independently from the other programs in memory. It is possible for a program to call and run a program in another segment using the PERFORM command. The END statement will cause a program to return to the original program.

THE MANUAL

Packaged with Fast Basic is a comprehensive manual. It is laid out with one keyword per page with an explanation of the purpose and syntax of the keyword, together with a short example of how it is used and a list of associated keywords.

DEMO DISK

The disk which comes packaged with Fast Basic contains a number of example programs. These provide an excellent reference for any problems which may arise when programming. Also on the disk are several utility programs. One of these enables a Fast Basic program to be turned into a desk accessory. Another of these utilities turns a Fast Basic program into a .PRG file which, when opened, runs Fast Basic and autoruns the program. It appears as though the program is running on a stand-alone basis, but the Fast Basic cartridge must be plugged into the the computer for the program to run. Computer Concepts have now, however, released a utility which will convert Fast Basic programs into completely stand-alone files.

A third utility on the disk enables synthesized speech to be produced. This is an excellent utility, the speech produced is of quite a high quality and is fairly easy to program.

SUMMING UP

Fast Basic is an excellent product. It has many more commands and facilities than I could possibly describe here. It is similar enough to other Basics to make switching from other dialects of Basic to Fast Basic quite easy. It also has many commands which are entirely specific to the ST. It combines the ease of programming and interactivity of Basic with the ability to program GEM applications. It also lives up to its name – it *is* very fast.

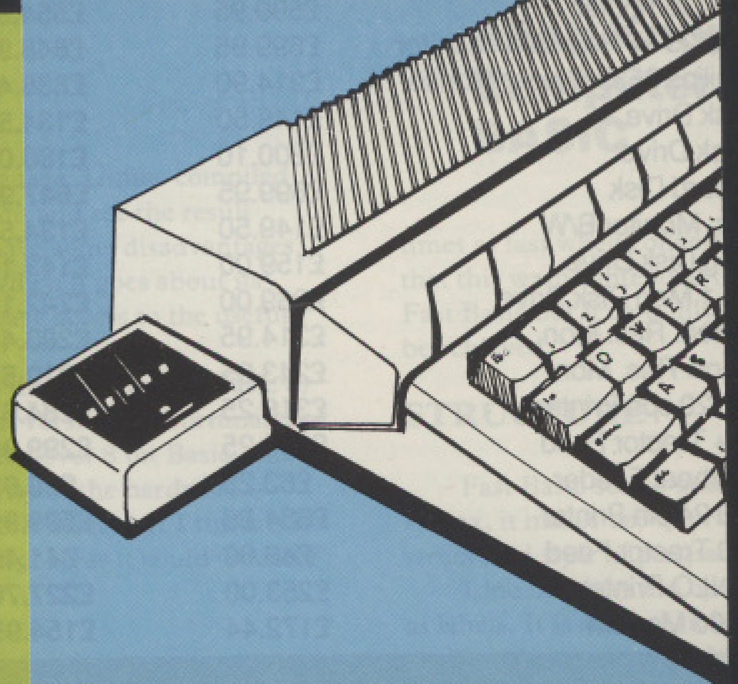
If you have an ST and want to program in Basic then you really must buy it. In an ideal world it would have been the Basic which was bundled with the ST by Atari. Fast Basic is a product that is every bit as good as the hardware it was written for. •

FAST

FAST BASIC
Atari ST cartridge

A new and very fast BASIC interpreter ROM cartridge for the Atari ST computers. This 128K program has been written specifically for the Atari ST computers and so makes full use of (and gives the programmer full access to) all the special features of this machine.

Based around BBC BASIC, but considerably extended, FAST BASIC is a modern structured programming language. It is the ideal environment for those who want to experiment with the ST and to find out about GEM and 68000 assembly etc.



SPEED
With an average PCW benchmark speed of 1.8 seconds, this is the fastest BASIC available (faster than any other PCW have tested) and is faster than BASIC running on the new Compaq 80386 super micro. See table for other comparisons.

EDITOR
A full GEM based scrolling editor is included. Supports search and replace, cut, copy, paste and very fast scrolling speeds. Multiple programs may be held in memory at once, and each program can have its own editing window and associated icon. A special immediate window allows commands to be used immediately without forming part of the BASIC program.

PROGRAM SIZE
There is no limit to program size, other than available memory, and there is no speed degradation for running large programs as there is on many other interpreters. Strings may be up to 64K long, arrays may be over 64K.

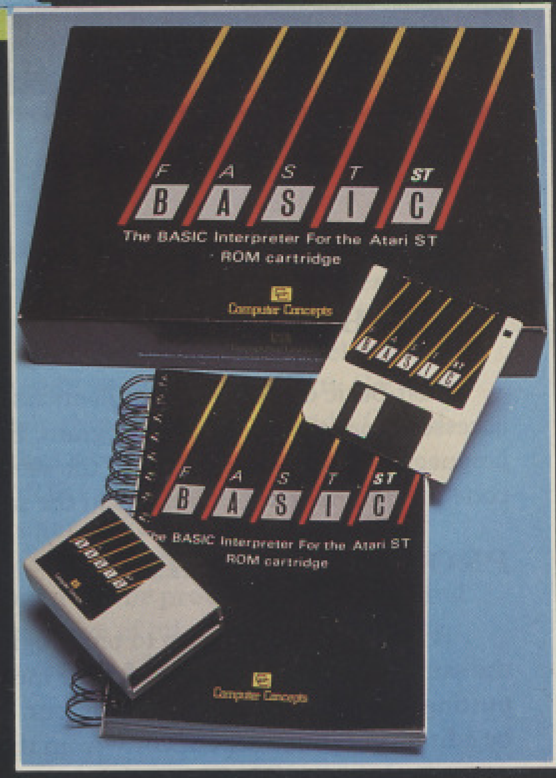
ASSEMBLER
Similar in concept to BBC BASIC, this allows mixing of assembly language and BASIC together. The assembler can assemble at over 50,000 lines per minute making it the fastest available. Macro and conditional assembly facilities combined with one of the best editors around makes this a superior alternative to many dedicated assemblers.

VARIABLES
FAST BASIC supports a full range of variables. 8, 16 and 32 bit integers for speed. Single and double precision floating point. Strings up to 64K and arrays of any size. The floating point maths routines are

Price £89.90 inc. VAT and postage.
Available from all good Atari dealers or directly from Computer Concepts.

FAST BASIC INCLUDES:

- **ROM Cartridge** - it uses no RAM, leaving the maximum available for BASIC programs. It does not have to be loaded from disc and so offers instant start-up and can be permanently available.
- **Example disc** containing a range of example programs from simple loops to complete GEM examples.
- **Manual.** Comprehensive 400 page spiral bound manual detailing all commands.
- **Quick reference card**



COMPARISONS

BASIC	PCW BENCHMARK	TIME
IBM PC		16·9
BBC B		14·6
MAC BASIC		7·1
ST BASIC		9·2
FAST BASIC		1·8

(Seconds)

BASIC

ST CARTRIDGE

STRUCTURED
Programs are normally written without line numbers. This, in addition to named procedures and functions, ensures that FAST BASIC programs are easier to write and simpler to understand than any other programming language. It also supports REPEAT..UNTIL, WHILE..WEND and multi line IF..THEN..ELSE constructs, and in addition a powerful SWITCH...CASE... ENDSWITCH structure eliminates the use of multiple IF..THEN statements. FAST BASIC supports many of the best features of languages like PASCAL or C, but without the drawbacks.

```
⇧ Desk  File  Edit  List  Run  Special
FRACTAL.BSC                                   Output
                                              Press ESCAPE to quit
REM  Fractal graphics
REM  from Scientific American.
REM  Adapted by Phil Martin

REM  Runs in any mode.

xo%=GRAFWIDTH/2:yo%=GRAFHEIGHT/
HIDEMOUSE
X=0
Y=0
REM  (Try 3,2,1 for starters)
INPUT"Type in any three numbers

REM  Plot dots, try with other
MARKTYPE 1

HOME:CLG 0:PRINT"Press ESCAPE t
```

DISK PRINTER CLIPBOARD FRACTAL.BSC DHPBIG.BSC

EXAMPLE SCREEN

Review

"...it positively flies."
"Students of structured programming will be well pleased.."
"Perhaps the most staggering, advantage of Fast BASIC over the official lingo concerns using the various facilities offered by GEM."
"...it's a vast improvement on Atari BASIC."

Popular Computing Weekly

GEM
Direct and full access is given to the ST graphics such as circle, arc, pie, area filling etc. In addition there is a range of keywords for contolling the menus, icons and windows. It is possible to write programs that present the user with a perfectly standard GEM type interface. An example of a complete GEM program is supplied on the example disc.

MONEY BACK GUARANTEE

If for any reason you are unsatisfied with FAST BASIC we offer a full, no quibble, money back guarantee.

Review

'The Fast BASIC package provides a complete system for the home programmer; the language is beautifully structured."
"The cartridge spans the gap between high level and low level programming languages and combines some excellent high level structures...It seems to have the advantages of languages like C and Pascal, without the restrictions."
"Bear in mind the fact that the cheapest assembler for the ST costs £39.95, this can only leave you to conclude that Fast BASIC really is phenomenal value for money."
"If you need a good programming language for home, business, or educational use, buy FAST BASIC. If you would like to program GEM applications but do not feel competent enough to tackle C, buy FAST BASIC. If you need a macro assembler with a good editor and enviroment, buy FAST BASIC."

ST User magazine - Oct 86

STAND ALONE DISC
Now available this disc enables FAST BASIC programs to run without the cartridge being present. Once a BASIC program has been written with the cartridge fitted, it can be converted, using this disc, to a stand alone GEM application program. Simply double click on its icon and it will execute the BASIC program as if it were a normal GEM program. This enables BASIC programs to be run while the cartridge slot is used for other things. Also programs can be written in FAST BASIC and given, or marketted, to others who do not have the cartridge We ask no licence fee or royalties.

£10+vat

Review

"..just about every command you could ever ask for is supplied, plus a good many others beside."
"-the execution speed has to be seen to be believed."
"..if you own an ST - even if you are a C or machine code programmer - you should own a copy of FAST ST BASIC."
"I don't know of a BASIC on any other machine which is so feature packed and yet still easy to use."

Atari User -Nov 86

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A STEP UP?

Sean Taylor tries C on the 8-bit with DVC/65

Since the launch of the ST, the fashionable language for use on these Atari computers has been 'C'. Languages of any description for the 8-bit machines however are, to say the least, hard to come by (ACTION and BASIC XL aside), however now the 8-bit user may sample the delights of this 'trendy' language with the DVC/65 'C' compiler.

PROGRAM OVERVIEW

The language comes supplied on a single double sided diskette, with a yellow and blue typeset booklet explaining the less standard functions of the system. On inspecting the booklet provided, it will become apparent that it is intended to be used as an appendix to the book 'The C Programming Language' by Kernighan and Ritchie. As might be expected the language implemented is a 'small' C, however the system does provide the facility to interface with 'ACTION!' and Assembler (namely MAC/65). The program diskette contains a variety of utilities and example programs, many of which may be run directly, although others require compiling first. On booting the diskette, you are greeted with a disk directory which loads and runs as an AUTORUN file. You are prompted for a program name and entering one of the demo names illustrates straight away the speed of the language. Before proceeding further the system disk should be backed up.

THE DOCUMENTATION

The documentation would appear to be the weakest point of the package. The 57 page booklet is adequate, but if you are new to C then it can be confusing. It would have been nice to have been provided with a complete function and word index, however the booklet does describe the functions it includes quite fully. The booklet may be considered as having three main sections, the first applying to the DVC compiler itself, the second to the use of the DVC system with the ACTION! cartridge, and the third with the use of the MAC/65 assembler. Again the text is direct and to the point, but the subjects are covered a little too briefly. The booklet does not pretend to be a tutorial, nor would I expect one, but I would have liked to have seen a few examples at least.

USING THE SYSTEM

DVC has some annoying anomalies, for example you cannot assign a value within a declaration, e.g. the expression

```
int val=10
```

would have to be given as

```
int val;
val=10
```

not crippling but annoying when errors arise at compile time. Probably of more interest, floating-point arithmetic is supported, but strangely floating-point numbers must be considered as character strings. If you are used to manipulating floating-point numbers in assembler using the operating system routines, then this may not seem so strange. As an example, the expression

```
float number;
```

would have to be replaced by

```
char number[6];
```

This illustrates that several data type structures are not supported, however some very useful utilities are provided for program development.

The most essential is the editor. This is smart and easy to use with all commands readily available on a menu screen by pressing '?' and allowing single key entry for loading, renumbering, disk cataloguing etc. Further prompts are provided as required by the program editor. All programs are written using line numbers, these being more for the benefit of the program editor than the programmer. Some very useful keywords have been provided using a [CONTROL]/[KEY] combination, for example pressing [CONTROL] and [P] will display printf(". These key combinations make program entry quicker and more pleasant.

The system supports a very powerful command line editor allowing programs to be loaded and arguments to be passed to them. For example:

```
D1:CC PROG LINK RUN
```

will load the compiler (CC.COM) which will then compile the program PROG.C, LINK.COM will create the relevant .LNK and .COM files and finally the program PROG.COM, created by LINK.COM, will be run.

All program names are normalised, that is to say that only the name need be specified, the DVC system will take care of the name extender and drive number. The system uses a custom DOS. which is compatible with DOS 2.0s and DOS 2.5, however system files cannot be run without the DVC system DOS being present. The DVC DOS will only support single or double density disk format, the dual density mode offered by the 1050 is not supported.

THE DISK FILES

The diskette comes with a large selection of utility files, games and functions. The main .COM files are provided on side A, including the system DOS. The system expects to find five forms of file name extender. These being .C to specify a text file, .CCC to specify a compiled text file, .LNK to specify a link file, .OBJ for an object file from an assembler and .COM for a file that may be readily executed.

Several useful utilities are provided, allowing the creation of AUTORUN.SYS files, customising of DVC-DOS, reconfiguring the disk set-up, provision of a ramdisk for the XE and the 800XL using a Mosaic Ramboard. For most of the utilities and games provided the

source code is readily available, allowing the utilities to be studied, altered and re-compiled. This freedom with the source files allows the author's programs to be studied and listed and also shows how to overcome some of the language anomalies.

Some very useful and amazingly fast graphics utilities have been included. They are best illustrated by running the graphic demo provided on the disk. These provide very fast drawing, plotting and circle drawing in graphics 8, running up to eight times faster than the normal functions also provided.

The system provides a very comprehensive set of functions for use with CIO. These hook directly to the operating system ROM and provide the versatility found when using these routines at machine code level.

HOW FAST IS DVC-'C'

A series of short benchmark routines were used, to compare DVC with Basic and GO-FORTH from SECS. In all cases the internal clock registers of the 800XL were used to produce the times shown.

BENCHMARK	BASIC	DVC-C	FORTH
		TIME/seconds	
1	25	8	5
2	56	14	6
3	60	14	7
4	103	19	13
5	128	21	38
6	14	13	–

From these times it is apparent that 'C' provides a speed increase of upwards of 50% over basic. However, as might be expected, the short floating point routines do not show any marked improvement. For calculations involving numerous iterations then some improvement would be expected. The floating-point benchmark also illustrates how these functions have been implemented in the DVC system.

DIFFERENCES AND UNSUPPORTED FEATURES

DVC shows several features that are either different from Standard 'C' or not supported at all. These may be listed as follows.

1) Structures and unions are not supported.
2) Multidimensional arrays and pointer arrays are not supported.
3) Full Floating-point arithmetic is not supported.
4) Variable types int, char, extern only are supported.
5) Macro expansions in £defines and assignments within declarations are not supported.
6) Constant evaluation is performed at compile time. No order of precedence is given to arithmetic operators, all expressions are evaluated from right to left.
7) Variables may not be declared within a statement block.
8) All functions return a two byte word.
9) The braces, due to the lack of the graphic on the keyboard, are replaced with $(and $).

These are probably the more evident differences. However for the most part they may be programmed around.

Figure 1 – BASIC Benchmarks

```
1 REM /* BASIC BENCHMARK ROUTINES */
2 REM /*          BENCH.BAS         */
3 REM /*  (C) S.TAYLOR  Dec 1986   */
4 REM
10 ? "BENCHMARK (01) :";
20 GOSUB 1000
30 FOR I=1 TO 10000
40 NEXT I
50 GOSUB 1100
60 ? "BENCHMARK (02) :";
70 GOSUB 1000
80 T=0:FOR I=1 TO 10000
90 T=T+1:NEXT I
100 GOSUB 1100
110 ? "BENCHMARK (03) :";
120 GOSUB 1000
130 T=0:FOR I=1 TO 10000
140 T=T+10:NEXT I
150 GOSUB 1100
160 ? "BENCHMARK (04) :";
170 GOSUB 1000
180 T=1:FOR I=1 TO 10000
190 T=I*10:NEXT I
200 GOSUB 1100
210 ? "BENCHMARK (05) :";
220 GOSUB 1000
230 FOR I=1 TO 10000
240 T=I/10:NEXT I
250 GOSUB 1100
260 ? "BENCHMARK (06) :";
270 GOSUB 1000
280 ? :? " N","X+H","PREDICTION"
290 H=0.1:X=1:Y=1
300 FOR N=1 TO 20
310 P=Y+H*(-Y*Y/X)
320 FOR I=0 TO 9
330 P=Y+(H/2)*((-Y*Y/X)+(-P*P/(X+H)))
340 NEXT I
350 ? N,X+H,INT(P*1E+10)/1E+10
360 Y=P:X=X+H
370 NEXT N
380 ? :GOSUB 1100
999 END
1000 POKE 18,0:POKE 19,0:POKE 20,0:RETURN
1100 T=PEEK(18)*65536+PEEK(19)*256+PEEK(20)
1110 T=INT(T/50)
1120 ? " DONE IN ";T;" SECONDS"
1130 RETURN
```

```
/* Floating-point Benchmark routine */
/*            FPBENCH.C              */
/*   (C) Sean Taylor December 1986   */
/*                                   */

char x[6],y[6],h[6],p[6],zero[6],two[6];
int n,i;
/* global variables */

main()$(
   itof(0,zero); /* zero fp constant */
   itof(2,two);  /* two fp constant */
   itof(1,x);    /* set x initially to 1,fp for
   atof(h,"0.1");/* h an fp constant */
   move(x,y,6);  /* y also initially 1 */
   printf("\fBENCHMARK (06)   :\n");
   printf("\n N            X+h           Predictor\n
   clrtime();
   for(n=1;n<=20;n++)$(
     function();/* get innitial estimate for P
       for(i=0;i<=9;i++)$(
          iteration();/* predictor */
    $)
  move(p,y,6);/* y=p */
  fadd(x,h,x);/* x=x+h */
  printf(" %d            %f            %f\n",n,x,p
$)
  n=gtime();
  n=n / 50;
  printf("\nDone in %d seconds\n\n",n);
$)

function()$(
  char f1[6];

  fsub(zero,y,f1);/* f1=0-y */
  fmul(f1,y,f1);  /* f1=-y*y */
  fdiv(f1,x,f1);  /* f1=-y*y/x */
  fmul(f1,h,f1);  /* f1=h*(-y*y/x) */
  fadd(f1,y,p);   /* p=y+h*(-y*y/x) */
$)

iteration()$(
  char f1[6],f2[6];

  fsub(zero,p,f1);/* f1=0-p */
  fadd(x,h,f2);   /* f2=x+h */
  fmul(f1,p,f1);  /* f1=-p*p */
  fdiv(f1,f2,f1); /* f1=-p*p/x+h */

  fsub(zero,y,f2);/* f2=0-y */
  fmul(f2,y,f2);  /* f2=-y*y */
  fdiv(f2,x,f2);  /* f2=-y*y/x */
  fadd(f1,f2,f1); /* f1=(-y*y/x)+(-p*p/x+h) */
  fdiv(h,two,f2); /* f2=h/2 */
  fmul(f1,f2,f1); /* f1=(h/2)*((-y*y/x)+(-p*p/x+h)) */
  fadd(f1,y,p);   /* p=y+(h/2)*((-y*y/x)+(-p*p/x+h)) */
$)
```

Figure 2 – C equivalents



```
/* DVC-C BENCHMARK ROUTINES */
/*          BENCH.C          */
/*  (C) S.TAYLOR  Dec 1986   */
/*                           */

main()$(
   bench_1();
   bench_2();
   bench_3();
   bench_4();
   bench_5();
$)

get_time()$(
   int t;

   t=gtime()/50;
   printf(" done in %u seconds\n",t);
$)

bench_1()$(
   int i;

   printf("\nBENCHMARK (01)  : ");
   clrtime();
   for(i=1;i<=10000;i++);
   get_time();
$)

bench_2()$(
   int t,i;

   printf("\nBENCHMARK (02)  : ");
   clrtime();
   t=0;
   for(i=1;i<=10000;i++)$(
     t++;
$)
   get_time();
$)

bench_3()$(
   int t,i;

   printf("\nBENCHMARK (03)  : ");
   clrtime();
   for(i=1;i<=10000;i++)$(
     t=t+10;
$)
   get_time();
$)

bench_4()$(
   int t,i;

   clrtime();
   printf("\nBENCHMARK (04)  : ");
   for(i=1;i<=10000;i++)$(
     t=i*10;
$)
   get_time();
$)

bench_5()$(
   int t,i;

   clrtime();
   printf("\nBENCHMARK (05)  : ");
   for(i=1;i<=10000;i++)$(
     t=i/10;
$)
   get_time();
$)
```

Figure 3 – Floating Point routines in C

CONCLUSIONS

The DVC-'C' system does provide very good value for money. The sheer number of utilities and example programs provided on both sides of the disk support this. Early versions of the disk contain a corrupted LIFE.COM file, which will not load or run, however this may be corrected by copying the relevant (LIFE.CCC, LIFE.OBJ and LIFE.LNK) files to a work disk and running the file linker.

The one major criticism, is the strange way in which floating point arithmetic has been implemented. It poses the question, "If you went this far, why didn't you do it properly?". Also of relevance multidimensional arrays and pointer arrays are not supported. Quibbles aside, the system is pleasant and easy to use. More importantly it does support the claims made by all those trendies, the language provides structured, easily read source code, and even more to the point, if you understand Basic then you should pick up 'C' in no time.

Overall this package should be wholly recommended. Buy it you and you won't be disappointed.

DVC/65 is available from Mikes Computer Store, 292 London Road, Westcliff-on-sea, Essex SSO 7JJ.

Learning

Flexible FINGERS

by Peter Gibbs

The ability to type quickly and accurately will save you hours, not only on word processing but also in typing in those long listings. A couple of commercial programs have been available in the past which have taught typing in the conventional way but Typing Test will enable you to brush up on speed and accuracy even if you use just two fingers!

The program will simply present you with a random sentence to copy (not easy mind you!) and will then check your typing for accuracy and speed. Not only will your typing improve but you will also have great fun with some *really* difficult words!

```
EI 1 REM ********************************
AE 2 REM *       FLEXIBLE FINGERS!      *
RQ 3 REM *              by              *
KX 4 REM *          Peter  Gibbs        *
EC 5 REM * ---------------------------- *
IZ 6 REM *  PAGE 6 MAGAZINE - ENGLAND   *
EO 7 REM ********************************
NN 8 REM
NQ 10 DIM A$(500),B$(500),C$(500),K$(1):P
   OKE 82,0
EK 20 B$=" ":B$(500)=" ":B$(2)=B$:OPEN #1
   ,4,0,"K:"
PC 30 DIM L$(43):L$="_":L$(40)="_":L$(2)=
   L$:L$(41)="↓↑↑"
ES 40 GRAPHICS 0:POSITION 8,10:POKE 712,4
   :POKE 710,0:POKE 708,60:POKE 711,30
IP 50 DL=PEEK(560)+256*PEEK(561):POKE 88,
   104:POKE 560,30:POKE 186,104
TE 60 FOR I=-2 TO 2:READ A:POKE DL+I,A:NE
   XT I:DATA 70,104,100,6,6
ZS 70 POKE 89,100:POSITION 0,0:? "     typ
   ing tutor     CH'TERS/SEC...     WORDS
   /MIN.....       ":POKE 89,156
FB 80 ? "K":POKE 25738,208:POKE 25758,208
GY 90 REM START
DP 100 A$="THE ":LINE=40
VF 109 REM  DESCRIPTIVE VERBS
ZS 110 RESTORE 750:FOR I=0 TO RND(0)*32:R
   EAD B$:NEXT I:GOSUB 590
ZF 119 REM  SECONDARY DESCRIPTIVES
MX 120 IF RND(0)>0.7 THEN RESTORE 780:FOR
    I=0 TO RND(0)*10:READ B$:NEXT I:GOSUB
    590
GY 129 REM  NOUNS
AP 130 RESTORE 790:FOR I=0 TO RND(0)*40:R
   EAD B$:NEXT I:GOSUB 590
SV 139 REM  ACTIONS
DP 140 RESTORE 830:FOR I=0 TO RND(0)*17:R
   EAD B$:NEXT I:GOSUB 590
HS 149 REM  POSITIONS
DJ 150 RESTORE 850:FOR I=0 TO RND(0)*16:R
   EAD B$:NEXT I:GOSUB 590
KA 160 B$="THE":GOSUB 590
HX 169 REM  PLACE DESCRIPTIONS
KI 170 IF RND(0)>0.7 THEN RESTORE 740:FOR
    I=0 TO RND(0)*11:READ B$:NEXT I:GOSUB
    590
IL 179 REM  PLACES
FM 180 RESTORE 870:FOR I=0 TO RND(0)*6:RE
   AD B$:NEXT I:GOSUB 590
XC 189 REM  START INPUT
MV 190 POSITION 0,7:? A$
CU 200 POSITION 0,4:? L$:POSITION 0,8+INT
   (LEN(A$)/40):? L$:WW=0:POSITION 0,15:?
    "    START TYPING WHEN YOU ARE READY█
   ←";
CE 210 FOR I=15 TO 0 STEP -1:SOUND 0,255,
   10,I:NEXT I:POKE 764,255
AS 220 IF PEEK(764)=255 THEN 220
BF 230 ? "↑";:POKE 18,0:POKE 19,0:POKE 20
   ,0
TW 240 GOSUB 620
EY 250 TIME=PEEK(20)+256*PEEK(19)+65536*P
   EEK(18):CS=((LEN(B$)-1)/(TIME/50)):WM=
   CS*60/5
YR 251 REM WM=CS*60/(HOWEVER LONG AN AVER
   AGE WORD IS)
GI 260 ? "K↓↓↓";
XG 269 REM  CHECK FOR ANY ERRORS
EK 270 A=1
LG 280 A=A+1:IF A>=LEN(A$) THEN 310
SN 290 IF A$(A,A)=" " AND A$(A-1,A-1)=" "
    THEN C$=A$(1,A-1):C$(A)=A$(A+1,LEN(A$
   )):A$=C$:A=A-1
PC 300 GOTO 280
DZ 310 A=1
QK 320 A=A+1:IF A>=LEN(B$) THEN 350
DP 330 IF B$(A,A)=" " AND B$(A-1,A-1)=" "
    THEN C$=B$(1,A-1):C$(A)=B$(A+1,LEN(B$
   )):B$=C$:A=A-1
NG 340 GOTO 320
DC 350 ? A$:POSITION 0,3:B$(500)="":ERROR
   =0:A=0:FOR I=1 TO LEN(A$)
YN 360 A=A+1:IF B$(A,A)="▸" THEN 430
GS 370 FOR S=15 TO 0 STEP -5:SOUND 0,5,10
   -PLUS/32,S:NEXT S
UF 380 PLUS=0:IF A$(I,I)<>B$(A,A) THEN PL
   US=128:ERROR=ERROR+1
WP 390 POSITION I-1-40*INT(I/40),3+INT(I/
   40):? CHR$(ASC(B$(A,A))+PLUS);:POSITIO
   N I-1-40*INT(I/40),6+INT(I/40):? A$(I,
   I);
EF 400 IF A$(I,I)=" " AND B$(A,A)<>" " TH
   EN 360
BM 410 IF A$(I,I)<>" " AND B$(A,A)=" " TH
   EN A=A-1:GOTO 420
VH 420 TRAP 420:NEXT I
MK 430 TRAP 430
OG 440 IF ERROR=0 THEN 520
XT 450 C$=STR$(ERROR):POSITION 11-LEN(C$)
   /2,14:? "I'VE FOUND ";C$;" ERROR";:IF
   ERROR>1 THEN ? "S"
BM 460 ? :? :IF ERROR=1 THEN ? "
       PRETTY GOOD":GOTO 490
IE 470 IF ERROR<10 THEN ? "▸▸    O.K.":GOT
   O 490
EU 480 ? "  NOT TOO GOOD YET ARE WE? TRY
   AGAIN!"
PW 490 C$=STR$(CS):C$(LEN(C$)+1)="      "
   :FOR I=1 TO 6:POKE I+25737,ASC(C$(I,I)
   )+160:NEXT I
AV 500 C$=STR$(WM):C$(LEN(C$)+1)="      "
   :FOR I=1 TO 6:POKE I+25757,ASC(C$(I,I)
   )+160:NEXT I
```

```
OS 510 GOTO 540
LI 520 POSITION 15,14:? "WELL DONE"
QP 530 GOTO 490
SO 540 ? :? "                              
   "
SH 550 ? "       PRESS START TO TRY AGAI
   N "
EZ 560 ? "                              
   ";
DM 570 IF PEEK(53279)<>6 THEN 570
PZ 580 ? "K":GOTO 90
BW 589 REM  ADD B$ TO THE END OF A$ 
PM 590 IF LEN(A$)+1+LEN(B$)>LINE THEN LIN
   E=LINE+40:A$(LEN(A$))="
         ":A$(LINE-39)=""
TP 600 A$(LEN(A$)+1)=B$:IF LEN(A$)/40<>IN
   T(LEN(A$)/40) THEN A$(LEN(A$)+1)=" "
ZE 610 RETURN
ZK 620 B$=" ":B$(500)=" ":B$(2)=B$:B$=" "
   :PTR=1:POSITION 0,15
IB 630 SOUND 0,0,0,0:POSITION PTR-1-40*IN
   T((PTR-1)/40),15+INT((PTR-1)/40):? "→←
   ";:GET #1,A:IF A=155 THEN RETURN
NB 640 K$=CHR$(A)
NX 650 IF K$="←" AND PTR>2 THEN PTR=PTR-1
   :C$=B$(1,PTR-1):C$(PTR)=B$(PTR+1,LEN(B
   $)):B$=C$:? "←◘";:GOTO 630
NC 660 IF K$="←" THEN 620
HK 670 IF K$="←" AND PTR>1 THEN PTR=PTR-1
   :GOTO 630
PV 680 IF K$="→" AND PTR<LEN(B$)-1 THEN P
   TR=PTR+1:GOTO 630
NW 690 SOUND 0,A,10,2
SV 700 IF A>122 OR A<32 OR A=60 THEN 630
GS 710 C$="":IF PTR>1 THEN C$=B$(1,PTR-1)
VG 720 C$(PTR)=K$:C$(LEN(C$)+1)=B$(PTR,LE
   N(B$)):B$=C$:? "◘";K$;:PTR=PTR+1
OX 730 GOTO 630
HX 739 REM  PLACE DESCRIPTIONS 
HV 740 DATA WIDE,THIN,NARROW,DANGEROUS
VT 749 REM  DESCRIPTIVE VERBS 
OI 750 DATA BIG,SMALL,WET,HOT,COLD,TINY,S
   HORT,LITTLE
RI 760 DATA QUICK,LAZY,SLOW,INTELLIGENT,R
   UDE,POLITE,UGLY,HANDSOME,GREAT,POOR,WI
   CKED
VK 770 DATA TALL,ZANY,SHY,BEDRAGGLED,FRIE
   NDLY,UNFRIENDLY,FIERCE,ANGRY,NOISY,LOV
   ELY,JUMPY,FOXY
ZX 779 REM  SECONDARY DESCRIPTIVES 
FM 780 DATA BLACK,WHITE,BROWN,DARK HAIRED
   ,SHORT HAIRED,GREY HAIRED,LONG HAIRED,
   BALD,HAIRY,MANGY,DRAB,OLD
HQ 789 REM  NOUNS 
FT 790 DATA MAN,WOMAN,BOY,GIRL,JUVENILE,O
   LD AGE PENSIONER,HAMSTER,CAT,DOG,HORSE
   ,GUINEA-PIG
VR 800 DATA MOUSE,ANIMAL,VOLE,CAVY,RABBIT
   ,HARE,HOUND,RAT,DONKEY,FOAL,KID,BOAR,C
   OW,GOAT,LLAMA,IDIOT
OZ 810 DATA EXTRA-TERRESTRIAL BEING,ALIEN
   ,TROLL,GIANT,HOBBIT,ZOO KEEPER,RODENT,
   TRAMP,APE
IM 820 DATA ANT EATER,ASS,CYCLOPS,SQUAW,M
   AMMOTH
TA 829 REM  ACTIONS 
NS 830 DATA WALKED,RAN,TROTTED,JUMPED,LEA
   PT,BOUNDED,ATE,PLAYED,STOOD,SAT,WAITED
   ,FROLICKED,HAD FUN,WAS CHASED,WAS TAKE
   N
JP 840 DATA LIKED TO BE,WANTED TO BE,WAS
HZ 849 REM  POSITIONS 
QQ 850 DATA ON,ACROSS,IN,DOWN,UP,OVER,BEH
   IND,IN FRONT OF,AWAY FROM,BY,NEAR,NOT
   FAR FROM,NORTH OF
GS 860 DATA SOUTH OF,EAST OF,WEST OF,ABOV
   E
IQ 869 REM  PLACES 
WB 870 DATA CREEK,RIVER,STREAM,STREET,ROA
   D,STREAM,AVENUE
```

NUTS

Winter is closing in fast. In order for Sam Squirrel to survive the cold season he must collect all the nuts in the nearby gardens. Sam is a very nervous squirrel though, so nervous in fact that he is frightened of his own footprints! If, on helping him round, you tread on an area that he has already visited Sam will likely die of a heart attack!

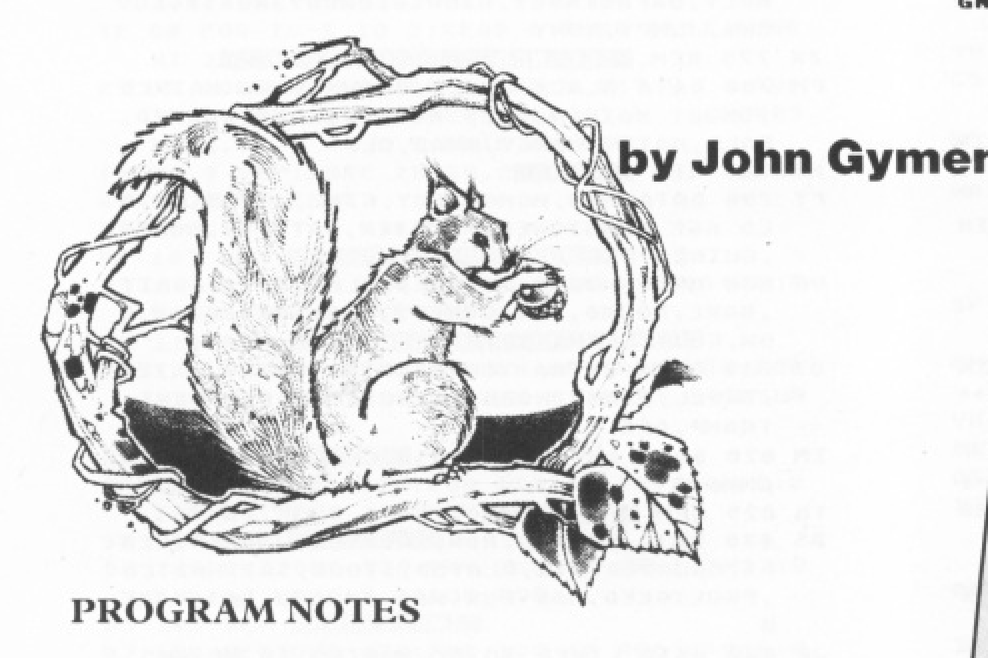
Sounds easy, doesn't it? Well, like every good game, there's always a snag. There is something nasty in the gardens. Sam is not sure what it is but being a squeamish squirrel (with a weak heart?) he is surely going to lose a life if that nasty thing touches him. Depending on the chosen skill level, it will chase Sam about the garden and if it succeeds in catching him, he will immediately lose a life.

When a whole garden has been cleared of nuts, Sam will go to the next one. Altogether, there are five different gardens, and once Sam has completed all of them, he will go back to the first by which time more nuts will have fallen.

PLAYING THE GAME

Use a joystick in port 1 to control Sam's movement – left or right will move him horizontally and up or down will move him back and forth across the garden.

Allow approximately twenty seconds for initialisation, after which time the title screen will appear. By pushing the joystick backwards and forwards you will be able to alter the skill level (1-6). When this is as desired, press START or the fire button to start play.



by John Gymer

PROGRAM NOTES

For any budding programmers, I have included a list of the 'main' variables and subroutines. Also, anyone wanting a decent sprite move routine may find the machine code from lines 1130 to 1190 useful. To operate this function use USR(1536, Location of move data, Location of put data, Length of move data).

You may find this routine useful for scrolling screens too.

```
WO 1 REM ******************************
ZY 2 REM *          N U T S !         *
RT 3 REM *             by             *
GY 4 REM *         John Gymer         *
SR 5 REM * -------------------------- *
XJ 6 REM *  PAGE 6 MAGZINE - ENGLAND  *
WU 7 REM ******************************
NN 8 REM
MO 90 W=0:K=1:U=2:HISC=6:SKI=K:LEV=K
PC 100 GOSUB 1380:SETCOLOR W,5,6:SETCOLOR
    K,12,9:SETCOLOR U,3,4:SETCOLOR 3,W,14
   :SETCOLOR 4,W,W
KO 110 LIV=3:SC=W:ST=W:GOTO 820
DE 120 Y=125:X2=85:Y3=6:X3=5
HU 130 BX=157:BY=74:BX3=14:BY3=3
TZ 140 REM < Main Loop >
BT 150 P=W:S=STICK(W):IF S=15 THEN GOTO 4
   10
PU 160 FOR N=1024 TO 1280 STEP 256:X=USR(
   1536,PMBASE+40,PMBASE+N+Y,13):NEXT N:X
   1=X2:Y1=Y:X4=X3:Y4=Y3
GR 170 IF S=14 THEN Y=Y-16:X2=X2+8:X3=X3+
   K:Y3=Y3-K:P=K
GK 180 IF S=13 THEN Y=Y+16:X2=X2-8:X3=X3-
   K:Y3=Y3+K:P=K
XM 190 IF S=11 THEN X2=X2-16:X3=X3-U:P=K
OT 200 IF S=7 THEN X2=X2+16:X3=X3+U:P=K
DC 210 IF P=W THEN GOTO 410
UK 220 REM < Check Pos. of Squirrel >
QE 230 LOCATE X3,Y3,Z:IF Z=81 THEN GOTO 4
   00
VH 240 IF Z=36 OR Z=164 THEN GOSUB 590
PP 250 LOCATE X3-U,Y3,Z1:LOCATE X3+U,Y3,Z
   2
GN 260 IF Z2=33 OR Z2=35 THEN POSITION X3
   +K,Y3:? #6;"[";:POSITION X3,Y3:? #6;"$
   ";
```

MAIN VARIABLES

BX, BX1, BX3, BX4	Hold horizontal positions of the 'nasty thing'
BY, BY1, BY3, BY4	Hold vertical positions of the 'nasty thing'
BYTE$	Holds machine code to copy down character set
CHACT	Address of character to be POKEd
HISC	High Score
LEV	Level/Garden
LIV	Lives left
MEM	Address of character set
NUTS	How many nuts needed
PMBASE	Used in P/M setting up and vertical movements
S$	Characters to be re-defined
SC	Score
SKI	Skill Level
ST	Nuts collected
X1, X2, X3, X4	Hold horizontal positions of squirrel
Y1, Y2, Y3, Y4	Hold vertical positions of squirrel.

```
MM 270 IF Z1=33 OR Z1=35 THEN POSITION X3
   -K,Y3:? #6;"]";:POSITION X3,Y3:? #6;"$
   ";
RA 280 IF Z1=36 THEN POSITION X3-K,Y3:? #
   6;",";:POSITION X3,Y3:? #6;"$";
EE 290 IF Z2=81 AND Z1>128 THEN POSITION
   X3+K,Y3:? #6;"■";:POSITION X3,Y3:? #6;
   "■";
OM 300 IF Z2=36 THEN POSITION X3+K,Y3:? #
   6;",";:POSITION X3,Y3:? #6;"$";
BG 310 IF Z1=81 AND Z2<128 THEN POSITION
   X3-K,Y3:? #6;"*";
BW 320 IF Z1=161 OR Z1=163 THEN POSITION
   X3-K,Y3:? #6;"■";:POSITION X3,Y3:? #6;
   "■";
SY 330 IF Z1=164 THEN POSITION X3-K,Y3:?
   #6;"■";:POSITION X3,Y3:? #6;"■";
VW 340 IF Z2=161 OR Z2=163 THEN POSITION
   X3+K,Y3:? #6;"■";:POSITION X3,Y3:? #6;
   "■";
RB 350 IF Z2=164 THEN POSITION X3+K,Y3:?
   #6;"■";:POSITION X3,Y3:? #6;"■";
HN 360 IF Z2=81 AND Z1<128 THEN POSITION
   X3+K,Y3:? #6;"+";:POSITION X3,Y3:? #6;
   "$";
FO 370 IF Z1=81 AND Z2>128 THEN POSITION
   X3-K,Y3:? #6;"■";:POSITION X3,Y3:? #6;
   "■";
RU 380 IF Z=35 OR Z=163 THEN GOSUB 660
NP 390 GOTO 410
IT 400 X2=X1:Y=Y1:X3=X4:Y3=Y4
ZN 410 REM < >
BK 420 X=USR(1536,PMBASE,PMBASE+1024+Y,13
   ):X=USR(1536,PMBASE+20,PMBASE+1280+Y,1
   3):POKE 53248,X2:POKE 53249,X2
OF 430 REM < Move Brush >
LA 440 S=INT(RND(W)*6):FOR N=1536 TO 1792
    STEP 256:X=USR(1536,PMBASE+40,PMBASE+
   N+BY,15):NEXT N
GV 450 BX1=BX:BY1=BY:BY4=BY3:BX4=BX3:IF S
   <SKI THEN GOSUB 700:GOTO 470
NW 460 S=INT(RND(W)*4)
RA 470 IF S=W THEN BY=BY-16:BX=BX+8:BX3=B
   X3+K:BY3=BY3-K
MK 480 IF S=K THEN BY=BY+16:BX=BX-8:BX3=B
   X3-K:BY3=BY3+K
TE 490 IF S=U THEN BX=BX-16:BX3=BX3-U
BF 500 IF S=3 THEN BX=BX+16:BX3=BX3+U
FP 510 REM < Check Pos. of Brush >
TF 520 LOCATE BX3,BY3,Z1:IF Z1=81 THEN GO
   TO 540
PH 530 GOTO 550
FE 540 BX=BX1:BY=BY1:BX3=BX4:BY3=BY4
ZW 550 REM < >
IR 560 X=USR(1536,PMBASE+60,PMBASE+1536+B
   Y,15):X=USR(1536,PMBASE+80,PMBASE+1792
   +BY,15):POKE 53250,BX:POKE 53251,BX
OR 570 IF X3=BX3 AND Y3=BY3 THEN GOSUB 59
   0:GOTO 130
NS 580 GOTO 140
JL 590 REM < Lose a Life >
VQ 600 Z=W:LIV=LIV-K:POSITION 6,9:? #6;LI
   V;
YH 610 FOR N=1024 TO 1280 STEP 256:X=USR(
   1536,PMBASE+40,PMBASE+N+Y,13):NEXT N
UY 620 FOR N=1536 TO 1792 STEP 256:X=USR(
   1536,PMBASE+40,PMBASE+N+BY,15):NEXT N
WL 630 FOR P=W TO 4:FOR N=150 TO 255 STEP
    15:SOUND W,N,10,8:SOUND K,N-K,10,8:NE
   XT N:SOUND K,W,W,W:NEXT P
UV 640 SOUND W,W,W,W:IF LIV=W THEN POP :P
   OP :GOTO 760
QM 650 FOR N=W TO 100:NEXT N:RETURN
TJ 660 REM < Pick up a Nut >
VZ 670 Z=W:FOR N=100 TO W STEP -10:SOUND
   W,N,10,8:SOUND K,N+U,10,8:NEXT N:SOUND
    W,W,W,W:SOUND K,W,W,W
TG 680 ST=ST+K:SC=SC+SKI:POSITION 14,9:?
   #6;SC;:IF ST=NUTS THEN POP :GOTO 1000
ZU 690 RETURN
KM 700 REM < Brush Chase >
HY 710 IF Y3<BY3 THEN S=W:RETURN
YQ 720 IF Y3>BY3 THEN S=K:RETURN
FQ 730 IF X3<BX3 THEN S=U:RETURN
DS 740 IF X3>BX3 THEN S=3:RETURN
OP 750 IF X3=BX3 AND Y3=BY3 THEN GOSUB 59
   0:GOTO 130
GN 760 REM < All Lives Lost >
YU 770 FOR N=1024 TO 1280 STEP 256:X=USR(
   1536,PMBASE+40,PMBASE+N+Y,13):NEXT N
VL 780 FOR N=1536 TO 1792 STEP 256:X=USR(
   1536,PMBASE+40,PMBASE+N+BY,15):NEXT N
GT 790 ? #6;"K":POSITION 5,5:? #6;"game o
   ver":FOR N=185 TO 255 STEP 5
SH 800 SOUND W,N,8,12:SOUND K,N,10,12:FOR
    P=W TO 10:NEXT P:SOUND W,W,W,W:SOUND
   K,W,W,W:FOR P=W TO 5:NEXT P:NEXT N
PD 810 GOTO 820
XQ 820 REM < Title Screen >
EH 830 ? #6;"K":RESTORE 900:FOR N=W TO 9:
   READ S$:POSITION W,N:? #6;S$;:NEXT N:I
   F SC>HISC THEN HISC=SC
FM 840 POSITION 14,3:? #6;SC;:POSITION 14
   ,4:? #6;HISC;:SKI=K
ZT 850 IF PEEK(53279)=6 OR STRIG(W)=W THE
   N POKE 711,14:? #6;"K":LIV=3:ST=W:SC=W
   :LEV=K:GOSUB 1320:GOTO 120
VR 860 IF STICK(W)=14 THEN SKI=SKI-K:IF S
   KI<K THEN SKI=6
EQ 870 IF STICK(W)=13 THEN SKI=SKI+K:IF S
   KI>6 THEN SKI=K
WL 880 P=P+K:IF P>255 THEN P=0
MP 890 POSITION 14,6:? #6;SKI;:POKE 711,P
   :GOTO 850
RO 900 DATA QQQQQQQQnutsQQQQQQQ
YJ 910 DATA QQQBYQJOHNQGYMERQQQ
AY 920 DATA QQQQQQQQQQQQQQQQQQQ
LQ 930 DATA QQQlastQscoreQQQQQQ
ZS 940 DATA QQQhighQscoreQQQQQQ
BE 950 DATA QQQQQQQQQQQQQQQQQQQ
TV 960 DATA QQskillQlevelQQQQQQ
BI 970 DATA QQQQQQQQQQQQQQQQQQQ
KX 980 DATA QPRESSQQSTART/FIREQ
BM 990 DATA QQQQQQQQQQQQQQQQQQQ
QV 1000 REM < Level Complete >
QL 1010 FOR N=1024 TO 1280 STEP 256:X=USR
   (1536,PMBASE+40,PMBASE+N+Y,13):NEXT N
QJ 1020 FOR N=1536 TO 1792 STEP 256:X=USR
   (1536,PMBASE+40,PMBASE+N+BY,15):NEXT N
HU 1030 ? #6;"K":POSITION 2,5:? #6;"scree
   n complete"
QX 1040 FOR N=255 TO 185 STEP -7:SOUND W,
   N-1,10,12:SOUND K,N,10,12:FOR P=W TO 5
   :NEXT P:SOUND W,W,W,W:SOUND K,W,W,W
BF 1050 FOR P=W TO 5:NEXT P:NEXT N
JJ 1060 FOR N=210 TO 145 STEP -7:SOUND W,
   N-1,10,12:SOUND K,N,10,12:FOR P=W TO 5
   :NEXT P:SOUND W,W,W,W:SOUND K,W,W,W
BL 1070 FOR P=W TO 5:NEXT P:NEXT N
HF 1080 FOR N=165 TO 100 STEP -7:SOUND W,
   N-1,10,12:SOUND K,N,10,12:FOR P=W TO 5
   :NEXT P:SOUND W,W,W,W:SOUND K,W,W,W
BR 1090 FOR P=W TO 5:NEXT P:NEXT N
```

SUBROUTINES

0 – 130	Set up main variables
140 – 420	Movement of squirrel
430 – 580	Movement of 'nasty thing'
590 – 650	Lose a life
660 – 690	Pick up a nut
700 – 750	'Thing' tracking routine
760 – 810	All lives lost – game over
820 – 990	Title screen
1000 – 1120	Screen complete
1130 – 1310	Set up sprites
1320 – 1370	Draw gardens
1380 – 1600	Re-define character set
1610 – 1990	Screen data

```
YP 1100 SOUND W,90,10,12:SOUND K,90,10,12
        :SOUND U,92,10,12:FOR N=W TO 200:NEXT
        N:FOR N=W TO U:SOUND N,W,W,W:NEXT N
XG 1110 ? #6;"K":LEV=LEV+K:IF LEV>5 THEN
        LEV=K
CT 1120 POP :GOSUB 1320:ST=W:GOTO 120
UX 1130 REM < Initialization >
IT 1140 REM From Atari User Vol.2-No.4
XB 1150 REM By L.Golding
RM 1160 RESTORE 1160:FOR J=W TO 86:READ A
        :POKE 1536+J,A:NEXT J:DATA 104,201,3,2
        08,81,104,133,225,104,133,224,104
YF 1170 DATA 133,227,104,133,226,104,133,
        229,104,133,228,169,0,133,230,133,231,
        168,177,224,145,226,24,169,1,101
II 1180 DATA 224,133,224,169,0,101,225,13
        3,225,24,169,1,101,226,133,226,169,0,1
        01,227,133,227,24,169,1,101,230,133
DE 1190 DATA 230,169,0,101,231,133,231,24
        ,165,228,197,230,208,206,165,229,197,2
        31,208,200,96
GT 1200 REM < Set up Sprites >
YB 1210 PMB=PEEK(106)-24:POKE 54279,PMB:P
        MBASE=PMB*256:FOR J=W TO 255:POKE PMBA
        SE+1024+J,W:NEXT J
AV 1220 FOR J=1280 TO 1792 STEP 256:X=USR
        (1536,PMBASE+1024,PMBASE+J,1024):NEXT
        J
VK 1230 FOR J=W TO 12:READ A:POKE PMBASE+
        J,A:NEXT J:FOR J=W TO 12:READ A:POKE P
        MBASE+J+20,A:NEXT J
EO 1240 FOR J=W TO 14:READ A:POKE PMBASE+
        J+40,A:NEXT J:FOR J=W TO 14:READ A:POK
        E PMBASE+J+60,A:NEXT J
WJ 1250 FOR J=W TO 14:READ A:POKE PMBASE+
        J+80,A:NEXT J
TG 1260 REM < Sprite Data >
IS 1270 DATA 0,0,32,0,64,0,0,0,0,0,0,0,0,
        19,35,83,119,55,55,62,126,60,60,60,28,
        120,0,0,0,0,0,0,0,0,0,0,0,0,0,0
VF 1280 DATA 16,16,16,16,16,16,16,254,254
        ,84,84,84,84,84,84,0,0,0,0,0,0,0,0,1
        70,170,170,170,170,170
AE 1290 DATA 16,16,16,16,16,16,16,254,254
        ,84,84,84,84,84,84
AW 1300 POKE 559,62:POKE 53277,3:POKE 623
        ,K:FOR N=53256 TO 53259:POKE N,K:NEXT
        N:POKE 704,14:POKE 705,6
EM 1310 POKE 706,132:POKE 707,53:RETURN
LM 1320 REM < Read in Screen Data >
KN 1330 POSITION W,9:? #6;"lives ";LIV;"
        score ";SC;:POSITION 2,W:? #6;"nuts
        screen ";LEV;
FN 1340 POSITION 2,10:? #6;"skill level "
        ;SKI;
HX 1350 RESTORE 1510+(LEV*100):NUTS=W:FOR
        N=K TO 8:READ S$:POSITION W,N:? #6;S$
        ;
TV 1360 NUTS=LEV+6
JB 1370 NEXT N:RETURN
IS 1380 REM < Re-define Characters >
XV 1390 DIM BYTE$(80),S$(70):RESTORE 1410
        :MEM=PEEK(106)-4:POKE 106,MEM-4:CHACT=
        MEM*256:GRAPHICS 2+16:POKE 559,W
TH 1400 FOR N=W TO 4:SETCOLOR N,W,W:NEXT
        N:FOR N=K TO 32:READ P:BYTE$(N,N)=CHR$
        (P):NEXT N
WR 1410 DATA 104,104,133,213,104,133,212,
        104,133,215,104,133,214,162,4,160,0,17
        7,212,145,214,200,208,249,230,213
FR 1420 DATA 230,215,202,208,240,96
JK 1430 Z=USR(ADR(BYTE$),224*256,CHACT):S
        $="!#$&'(ABCEFGHIJKLMNOPQRSTUVY0123456
        789*+,[]":RESTORE 1450
JM 1440 FOR CHAR=K TO LEN(S$):POS=CHACT+(
        ASC(S$(CHAR))-32)*8:FOR X=W TO 7:READ
        A:POKE (POS+X),A:NEXT X:NEXT CHAR
YX 1450 REM < Character Data >
PG 1460 REM From Bertie by M.Kempster
QL 1470 REM Page 6 Issue 18
VC 1480 DATA 255,255,255,255,255,255,255,
        0,255,192,152,60,25,3,255,0,255,170,85
        ,170,85,170,255,0,253,251,247,239
OB 1490 DATA 223,191,127,0,1,3,7,15,31,63
        ,127,0,252,248,240,224,192,128,0,0,0,2
        8,62,119,127,119,119,119,0,126,115
JU 1500 DATA 126,127,115,127,126,0,63,112
        ,112,112,127,127,63,0,127,112,124,112,
        127,127,127,0,127,112,124,112,112
KS 1510 DATA 112,112,0,63,112,112,119,115
        ,127,62,0,119,119,127,127,127,119,119,
        0,127,28,28,28,127,127,127
WR 1520 DATA 0,127,12,12,12,124,124,56,0,
        115,119,126,124,126,119,115,0,96,96,96
        ,96,127,127,127,0,99,127,127,127
JA 1530 DATA 107,99,99,0,115,123,127,127,
        119,115,115,0,62,119,119,119,127,127,6
        2,0,126,115,127,126,112,112,112
DA 1540 DATA 0,0,0,0,0,0,0,0,0,126,115,12
        7,126,119,119,119,0,63,127,112,126,7,1
        27,126,0,127,127,28,28,28,28,0
PO 1550 DATA 119,119,119,119,127,127,62,0
        ,119,119,119,119,127,62,28,0,119,119,1
        27,28,28,62,62,00,63,51,51,63,63,63
IP 1560 DATA 63,0,12,60,12,12,12,63,63,0,
        63,63,3,63,48,63,63,0,63,63,3,15,3,63,
        63,0,51,51,51,63,63,3,3,0,63,63,48
QW 1570 DATA 63,3,63,63,0,63,63,48,63,51,
        63,63,0,63,63,3,3,3,3,0,63,63,51,63,
        51,63,63,0,63,63,51,63,3,63,63
ZX 1580 DATA 1,2,5,10,21,42,127,0,252,168
        ,80,160,64,128,0,0,253,170,85,170,85,1
        70,127,0,253,171,87,175,95,191,127,0
EQ 1590 DATA 253,250,245,234,213,170,127,
        0
KU 1600 POKE 756,MEM:GOTO 1130
QQ 1610 REM < Screen 1 Data >
SN 1620 DATA QQQQQQQQQQQQQQQQQQQQ
LW 1630 DATA QQQQQQ'#&!&!&!&!&!(Q
AT 1640 DATA QQQQQQQ'!&#&!&!&#(QQ
HA 1650 DATA QQQQ'#&!&!&!&!&!(QQQ
NN 1660 DATA QQQ'!&#&!&!&#&!(QQQQ
BC 1670 DATA QQ'!&!&!&!&!&!(QQQQQ
ET 1680 DATA Q'#&!&!&!&!&!(QQQQQQ
TI 1690 DATA QQQQQQQQQQQQQQQQQQQQ
CT 1700 DATA
RL 1710 REM < Screen 2 Data >
SP 1720 DATA QQQQQQQQQQQQQQQQQQQQ
OG 1730 DATA QQQQQQ'!&#&!&!&!&#(Q
EF 1740 DATA QQQQQ'!(Q'!&#&!&!(QQ
FW 1750 DATA QQQQ'!&!&!&!&!&!(QQQ
PB 1760 DATA QQQ'#&!&#&!&!&#(QQQQ
TR 1770 DATA QQQQ'!&!&!&!&!(QQQQQ
GL 1780 DATA Q'#&!&!&!&#&!(QQQQQQ
TK 1790 DATA QQQQQQQQQQQQQQQQQQQQ
CV 1800 DATA
SG 1810 REM < Screen 3 Data >
SR 1820 DATA QQQQQQQQQQQQQQQQQQQQ
OA 1830 DATA QQQQQQQQQQ'#&!&!&#(Q
SP 1840 DATA QQQQQ'#&!&!&!&!&!(QQ
HU 1850 DATA QQQQ'!&!&!&!&#&!(QQQ
BB 1860 DATA QQQ'!&!&#&!(QQQQQQQQ
CV 1870 DATA QQ'#&!(Q'!&!&#(QQQQQ
GN 1880 DATA Q'!&#&!&#&!&!(QQQQQQ
TM 1890 DATA QQQQQQQQQQQQQQQQQQQQ
CX 1900 DATA
TB 1910 REM < Screen 4 Data >
ST 1920 DATA QQQQQQQQQQQQQQQQQQQQ
KN 1930 DATA QQ'!&!&#(Q'!&#&!&#(Q
BF 1940 DATA QQQ'!(Q'#&!&!&!&!(QQ
QD 1950 DATA QQ'#&!&!&#&!&!&!(QQQ
OB 1960 DATA QQQ'!&!&#&!&!&#(QQQQ
BB 1970 DATA QQ'#&!(Q'!&!&!(QQQQQ
FL 1980 DATA Q'!&!&!&#&!&!(QQQQQQ
TO 1990 DATA QQQQQQQQQQQQQQQQQQQQ
CG 2000 DATA
TD 2010 REM < Screen 5 Data >
SC 2020 DATA QQQQQQQQQQQQQQQQQQQQ
PD 2030 DATA QQ'!&#&!&!&!&!&!&#(Q
BW 2040 DATA QQQ'#(Q'!&#&!&!&!(QQ
PY 2050 DATA QQ'#&!&!&!&!&!&#(QQQ
SA 2060 DATA QQQ'!&!&!&!&!&!&!(QQ
QN 2070 DATA QQ'#&!(Q'!&#&!&#(QQQ
DK 2080 DATA Q'!&!&#&!&!&#&!&!(QQ
SX 2090 DATA QQQQQQQQQQQQQQQQQQQQ
CI 2100 DATA
```

£100 PROGRAMMING CONTEST!

Here's a chance to show how clever you are. We would like a new title screen for the PAGE 6 Issue disks and rather than get someone to write it specifically we thought we would give you the chance to put forward your ideas.

You will probably need one of the PAGE 6 Issue disks to get an idea of what is required (more sales!) but briefly we need a good animated title which announces the Issue number and date of the disk. Entries can be in Basic or machine code but must conform to the following guidelines.

1. The first few lines must contain variables or data for the Issue number and month/year of issue and colour registers so that these can be easily altered. If written in machine code, these must be in the form of a table which can be altered with a sector editor.

2. The program must be able to be exited before completion by pressing any of the function keys (START/SELECT/OPTION).

3. The program must, on exiting as above or after finishing (with a short pause) run a Basic program entitled "D:MENU".

4. On exiting by any means, all Player Missile Graphics and other registers must be reset to their default values.

5. The program must run on all 8-bit models i.e. it must not use features found only on the XL/XE and must not use illegal jumps to the OS.

The theme can be entirely yours but the program should be capable of being easily changed slightly for each issue, even if only the colours. Perhaps several different optional backgrounds could be supplied? Let your imagination flow!

THE PRIZES: Real cash! The entry selected by the Editor as the winner will receive £75 and a free disk subscription to PAGE 6 worth £30. Two runners up will each receive £25 and a disk subscription.

What more incentive could you want? Of course you'll really do it because you love programming that old Atari and because your program will be seen by Atari owners all over the world, won't you?

The Editors decision will be final and PAGE 6 will retain the right to use any prize winning programs on their regular Issue disks until further notice. Disks will only be returned if requested and if accompanied by return postage.

DEADLINE: 20th APRIL 1987. Get writing!

Entries should be sent to TITLE CONTEST, PAGE 6, P.O.BOX 54, STAFFORD, ST16 1DR

B/GRAPH
Ariolasoft
£29.95

Reviewed by John S. Davison

Ever since I bought Atari's original 'Graph-It' program for my 16K 400 many moons ago, I've been wishing someone would produce a good graphing and charting utility for the 8-bit machines. Well, my wish has been granted – thanks to Ariolasoft (again!). The B/Graph package has an added bonus, too. It includes statistical analysis functions, allowing you to test, manipulate and reduce raw data into more meaningful information before displaying it graphically in many different ways.

Packaging and presentation is of the high quality which now seems to be standard on Ariolasoft's flagship range of 8-bit software, matching that of HomePak and PaperClip (both reviewed recently in Page 6), BUT, they do persist in printing their instruction manuals sideways with the spine at the top instead of the left hand side, and binding it in such a way that it won't stay open at the chosen page! And really, a 146 page manual SHOULD have a proper alphabetic index, although to be fair, the list of contents used here is fairly detailed.

The facilities provided by this package are comprehensive, to say the least. They're implemented via ten separate programs supplied on two single sided disks. Learning to use a package as complex as this could be a nightmare, so Ariolasoft have taken the sensible approach of writing the manual as a series of tutorials covering all of the major functions. Sample data is provided on the second disk, so you don't have to invent your own while learning some of the more exotic functions.

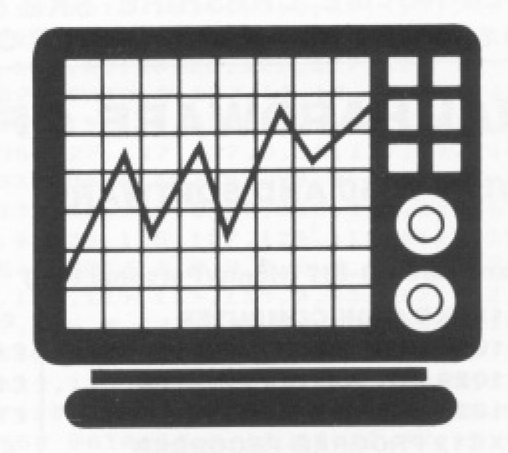
The package is mostly menu driven, and generally friendly and easy to use. Most screens prompt you as to what actions you can take next, although this is not always so. Some functions, notably imaging, use a full screen display, with no room for menus or prompts. I ended up writing out the required key commands on a reference card as a reminder.

GRAPHING AND CHARTING

For most people, the graphing and charting features are the ones which will get most use. B/Graph can produce a graph or chart to suit virtually any purpose, including line plots, scatter plots, area graphs, two and three dimensional bar charts, with factors stacked or side by side, market graphs (for stocks and shares), and pie charts. You can quickly switch back and forth between compatible chart types until you find one that best suits your needs.

B/Graph will handle up to three factors, that is, you can plot three different sets of data on one chart. This was a disappointment at first, as I often need to plot more sets than this. However, B/Graph lets you superimpose charts over each other, so if you needed six lines on a graph you could produce two sets of three and then overlay one on the other. The only problem is that there are only three different styles of line, so it could get a bit confusing.

Each factor can have up to 100 values – good enough for most home use purposes. There are display limitations with bar charts, though, restricting you to a maximum of 48 values. If you have more values than this, you have to use a line graph instead.



Positive and negative integer or decimal data values are handled, and B/Graph will automatically scale the axes for you, so you don't have to worry about plotting points that go 'off the chart'. To meet special needs you can turn off the automatic scaling function and do it manually.

Labelling your charts is easily achieved, with standard facilities for entering main and secondary title lines, X and Y axis titles, and chart identification number.

Pie charts work slightly differently in that you can key in up to 16 values and their descriptive labels. B/Graph then calculates the percentage value of the total each represents and displays them all graphically in the familiar 'pie slice' format.

CUSTOMISED CHARTS

Any chart can be customised by adding solid or dotted grid lines (horizontal and/or vertical), adding borders to the top and right hand side to match the usual X-Y axes, and set colour and intensity of background and plots to suit any requirement.

One other small disappointment concerned use of colour. Detailed colouring is achieved via – you guessed it – artifacting, which means users of non-American standard TV's see only patterns rather than colours. However, the patterns do effectively separate the different chart areas, so this is no real hardship.

PRINTING AND IMAGING

One of the joys of this program is the ease with which you can obtain a printout of your charts and data. It's as simple as pressing the START key. This gives a rapid, good quality screen dump producing a picture size of about one quarter of an A4 page. Most popular printers are supported. My only criticism is that pie charts printed on my Star SG10 were slightly oval, rather than circular. This happens with some printers as horizontal and vertical dot pitch is sometimes not quite the same, and B/Graph assumes it is.

The screen display is created in real time from data provided by you. Sometimes you may want to display a whole series of different charts without having to wait while B/Graph builds each one from the base data. To do this, you use B/Graph's imaging facilities to save screens to disk as 66 sector files. A utility is provided to display these in sequence as a 'slide show'.

THE BEST ATARI SOFTWARE

That's what we want *you* to tell *us!*

You will have noticed that we don't give star ratings or points to programs we review but many users like to be able to compare programs on a ratings basis. So (with your co-operation), we intend to run a regular feature showing those programs that Atari owners at large feel are the best and the worst.

What we want you to do is to go through your software collection (or at least some of it!) and rate each program from 0 (for abysmal) to 10 (for the absolute tops), jot it down on a postcard and send it to us. Whenever you buy something new and have formed an opinion, send us your marks on that and we will update the charts each issue. We will publish separate charts for Adventures, Games, Applications and ST software.

There is no need to categorise programs if you don't want to, but please make sure that you make it clear whether the programs are for 8-bit or ST.

No chart system is infallible but if enough readers voice their opinion we must get a much fairer reflection of what is good and bad than if we asked one reviewer to be sole judge and arbiter.

So let's be hearing from you. This is your chance to participate! Get cracking on those cards and send them to:

THE BEST ATARI SOFTWARE, PAGE 6, P.O.BOX 54, STAFFORD, ST16 1DR

Imaging facilities also permit you to use additional custom labelling on your chart. This time, however, you have complete flexibility as to positioning, fonts, text size, and colour (artifacted). A further use of this facility is to produce text only screens for inclusion in 'slide shows' of other charts. B/Graph provides several different fonts, including Greek, Hebrew, Russian, and Eskimo(!) alphabets. These may be rotated in 90 degree increments, if required, for special labelling purposes.

Yet another option provides a means of passing B/Graph charts to some of the newer word processors (like Antic magazine's Word Magic, and Ariolasoft's PaperClip) which can integrate them with text into documents.

LIES, DAMNED LIES, AND....

Statistics packages are something of a rarity on the Atari. Even if B/Graph contained only the features described so far, it would be a good buy. The fact that it also contains a whole raft of statistical analysis functions makes it doubly so (if you can understand and make use of them, that is!). I don't claim to be a statistician, but there are items here even I can use.

All the standard functions are present including mean, median, standard deviation, variance, skewness, kurtosis, upper/lower quartiles, and maximum/minimum values for a given set of data.

Data manipulation functions include exponential smoothing, arithmetic and geometric moving averages, predefined or customised factor calculations, e.g. divide factor 1 by factor 2, or use the factor values in any valid Atari BASIC expression supplied by you. Also, you can change the order of factors, remove factors, and load factors from another file. If you have a few missing values in a given factor, B/Graph will provide estimated values for them, if you wish.

Visicalc owners rejoice! B/Graph can read Visicalc DIF files, allowing you to visually illustrate your spreadsheets. Data can also be passed in the reverse direction, enabling Visicalc to read B/Graph data.

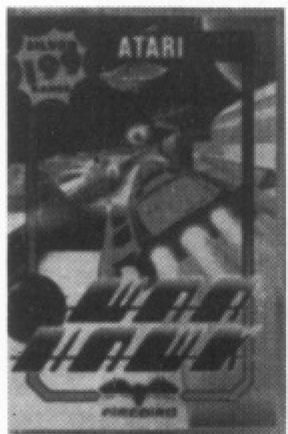
Other features cover F, T and Chi-Square tests, and Normal, Poisson, and Binomial Distribution probability testing. In addition, there are facilities for regression and correlation analysis. Phew – hairy stuff! Obviously, you need to know what you're doing to get the most out of some of this. The B/Graph manual isn't designed to give you more than a brief overview of what it's all about, but does recommend suitable books for further study, if you need it.

CAN YOU LIVE WITHOUT IT?

B/Graph, quite simply, is first class, quality software for the 8-bit Atari (and for the ST soon). If you need to produce graphical charts or do a little statistical analysis for home, educational, or even business use, then go out and buy B/Graph now. It's worth every penny of the asking price. •

SHORT REVIEWS





WAR HAWK
Firebird
£1.99 cassette only
1 player
1 joystick

JIM SHORT BURNS THE MIDNIGHT OIL TO LOOK AT HALF A DOZEN MORE GAMES FOR YOUR ATARI

There's a budget war raging with Firebird and Mastertronic battling it out between them to produce the best Atari 'cheapie'. Previously, Mastertronic led the race handsomely with top notch games like NINJA and LA SWAT but Firebird have retaliated with a real cracker in the form of WAR HAWK.

It's a vertical scrolling space-zap game which shares many similarities with Uridium, a top-seller on various other micros. The aliens have set up their defenses on a huge asteroid belt and you must fly Warhawk into the heart of that asteroid belt, destroying bases and wiping out the marauding fleets of enemy starfighters. Watch out for space mines and meteor showers which will erode your defensive energy shields. Once your shields give out the game is over.

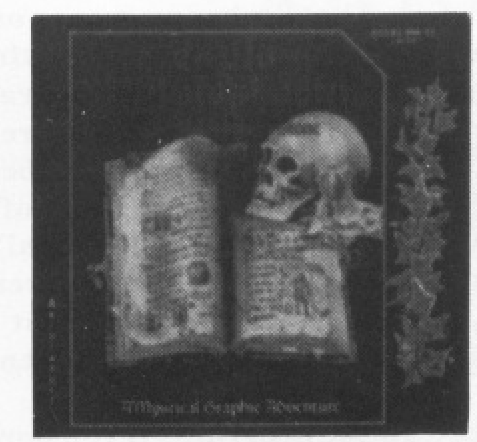
If you survive the initial run over the asteroid base and the subsequent kamikaze attack by the starfighters which converge on your ship like a swarm of angry bees – they have no firepower but, instead, try to deplete your shields by ramming into you – your first mission is complete and you advance onto the next asteroid with your shields restored to maximum strength.

Should you manage to completely wipe out any individual base you are rewarded with a welcome bonus. An ordinary joystick isn't much help here and an auto-fire stick is a must. It's difficult to rack up a decent score without one.

WAR HAWK scores high on playability, though it tends to get impossible on the higher levels – or so I'm told! Graphics are bold and colourful, sound is well up to scratch for this type of game, and it has that elusive quality which keeps you coming back for more. If you're a glutton for punishment you'll appreciate this one.

Not content with all this, Firebird have tossed in a few extras. The title screen is a stunner, depicting a moving starfield fading away into the distance and giving the best impression of 3-D I've seen in a long while. However, the theme music is the real show-stopper. Composed by Rob Hubbard it is causing quite a stir in Atari circles at the moment. My own personal favourite is 'Song of the Grid' from BALLBLAZER, but most other Atarians reckon the WAR HAWK theme is the best yet on our computer. For once I'll bow to the majority and concede the point.

It's going to take something extra special to knock WAR HAWK off the top of the budget pedestal. Other software companies may have to do some soul-searching. How much longer can they continue to charge £8-10 a game when there are gems like this hitting the market at only £1.99? Think about it.



LAPIS PHILOSO PHORUM
'Philosopher's Stone'
Ariolasoft
£14.95 – Disk only
1 Player
Keyboard

Twentieth Century Royalty have never had it so good – sitting back with their feet up sipping a glass of Bollinger, making the odd Christmas speech now and again just to keep up appearances whilst letting the Government mess up the running of the country for them. Ah, what a life!

It wasn't quite so cushy in bygone days. PHILOSOPHER'S STONE is a graphical adventure set in ancient times. King Gieselher, wise ruler of Alkanien, has been poisoned by his evil stepson in a bid to seize the throne. Messengers have scoured the land in vain for a cure to save the old King and now, in desperation, they have turned to you, a loyal servant who once dabbled in the mystical art of alchemy. Can you help save the King?

Maybe it's not the done thing in adventure circles but I'm going to put the cat among the pigeons by confessing that I prefer graphic adventures to text only ones. It's been said many times that you don't need graphics when there is good descriptive text as offered by Infocom and the like, but I don't agree. Perhaps I don't have a vivid enough imagination? In any case, I can't see the sense in ploughing through line after line of text just to get an image forming in your head when a picture does it for you instantly. Anyway if, like me, you prefer your adventures with artwork then PHILOSOPHER'S STONE will not disappoint you. The many and varied picture scenes are bright, clear, full of detail and remarkably similar to the type used in Activision's 'Mindshadow', another first-rate adventure in my opinion.

The parser is of the verb/noun variety, which I feel most people are comfortable with despite the claims of some programs to understand full 'English' sentences. I've lost count of the

times I've typed sentences into these programs only to be disappointed with the replies. I always use verb/noun inputs – yes, even with Infocom adventures. Maybe that's why I've never actually completed one!!

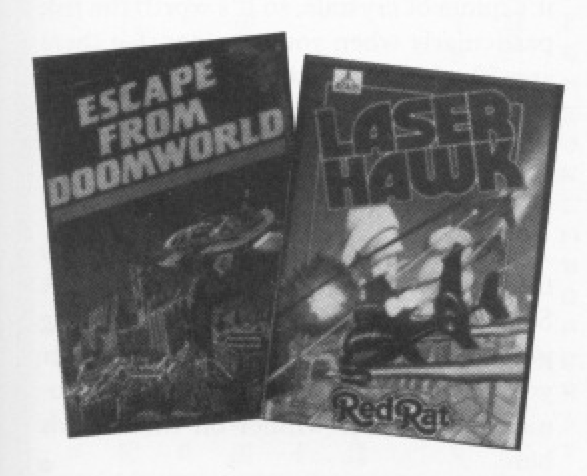
A word here about the text which is done in bold 'Olde English' style – large black letters on a light background – and is infinitely more readable than the terrible stuff used in the early Scott Adams adventures. The program also features an impressive title screen and even a catchy 'singalong' theme tune. Plenty of extras for your money!

You begin the game in the comfort of your own home deep in the heart of the walled city. A quick rummage through the attic reveals a couple of useful items, including a book which gives you a clue to the solution of all your problems – the Philosopher's Stone. Only problem is how to find it!

Outside in the streets you are presented with yet another major problem – how to get out of the city. You're in league with the King remember, so his stepson has doubled the guard on the main gate to prevent you from leaving. An alternative method has to be found. And now your troubles really begin......

This is poised to take over from 'Mindshadow' as my favourite adventure. It offers a series of logical puzzles which require smart thinking rather than a University degree in psychology. It also gives clever, interesting replies. When you tell it to 'TAKE *object*' it responds with things like 'How can I do what is already done?' or 'I am sure it is safely stowed away' rather than the usual boring 'OK' or 'Taken'. I like it's sense of humour too. If you 'PLAY LUTE' to the guards at the gate you are subsequently thrown in jail for disturbing the peace. That won't get you very far, mind you, but you'll get a laugh from it if nothing else!

This game is a whole lot of fun. I may only be a novice where adventures are concerned but I know a good program when I see one. Highly recommended.



ESCAPE FROM DOOMWORLD

Red Rat
£9.95 disk
£7.95 cassette
1 player
1 joystick

Red Rat keep churning them out (more power to their elbow!) so helping to fill the gap left by English Software, who are no longer Atari's main British software producer.

ESCAPE FROM DOOMWORLD is a three-in-one action arcade game. A group of leading Earth scientists are held captive on Doomworld and they have to be rescued before their vital knowledge can be used against us.

The first stage is like a platform game minus the ladders and you move around the levels with the aid of some clever jumping techniques. Various objects have to be collected before moving onto the second stage. Here you take to the air in your spaceship and some 'Choplifter' manoeuvres are required to pick up all the scientists and drop them safely at your base. You stay with your ship for the final stage where skilful flying is needed to negotiate an assortment of columns and collect the three bombs which will destroy the alien planet and result in the completion of your mission.

DOOMWORLD starts off quite well but fades away as you progress through the three stages. The first stage is the strongest one by far and perhaps a better game could have been written based on that idea alone?

Passable enough this one, but is it worth the asking price? Like DOMAIN OF THE UNDEAD I feel it should have been a budget game. Maybe you'd like to judge for yourselves?

LASER HAWK

Red Rat
£9.95 disk
£7.95 cassette
1/2 players
1/2 joysticks

Forget modern software trends. Everybody knows it's hard to beat a good old-fashioned space blaster. When all else fails give the punters what they really want – another 'zap those nasty bug-eyed critters into space dust' games.

LASER HAWK is a jazzed-up version of Scramble – no caverns though, just continuous left to right scrolling across an open-air alien landscape. You take on the role of the famed Mercenary, Jim din'Alt, who has been recruited to destroy the 5 command headquarters of the evil Proc Irata, which just happens to spell 'Atari Corp' backwards. Naturally, these are heavily guarded by the obligatory defence systems, comprising of air cannons, robotships, volcanic eruptions, missile launchers, meteorites, homing missiles, laser-beams and the like. Not that a few paltry defenses will hamper a man (sorry ladies but Jim is definitely a man's name – I hope!) of your capabilities. Besides, the headquarters are codenamed BEEB, COMM, APP, AMS and SIN and come in the shape of the applicable computer symbols. If that doesn't give you the incentive to bomb the living daylights out of them then nothing will!!

I'm tempted to label this game as a poor-man's BETA LYRAE as it bears more than just a passing resemblance to the Datamost game. Beta Lyrae is the ultimate computer Scramble and LASER HAWK can't really hope to compete, but it is a reasonably good alternative. What it lacks in fancy frills and refinement it makes up for in playability not to mention barefaced cheek! Bombing Commodore and Spectrum symbols? .... I like it, I like it!!

Worth the effort this one. Make sure you check it out.

JET SET WILLY

Tynesoft
Cassette
1 player
1 joystick



I've never liked this game. I saw it when it was initially released on the Spectrum and Commodore and could never quite understand what all the fuss was about. Mind you, I was reared on stuff like Astrochase and Blue Max and Necromancer, so maybe that had a lot to do with it? Anyway, despite the silly little matchstick graphics and the fact that you needed a magnifying glass to even see anything on the TV screen, despite the game being full of bugs, meaning you could step into a trap and lose all your remaining lives without being able to do anything about it, despite having to type

in a hundred different 'cheat' pokes to override the bugs in order to complete the game, it still managed to top the software charts and earn the dubious accolade of 'Game of the Year'.

So who's kidding who? Well, owners of those 'other' computers will defend JET SET WILLY come hell or high water and, indeed, they sang it's praises right up until the very moment they were carted off to the Funny Farm by the men in white coats. Half a million loonies can't be wrong, or can they? They'll be telling us next that the latest Status Quo single isn't exactly the same as the last one!

And now JET SET WILLY has arrived on the Atari (why us?) and, in the interests of fair-play, I am prepared to cast all prejudices aside in order to give it a fair crack of the whip. Okay, I've looked at it, played it, studied it in great detail and...... it's terrible!

The Atari version is an insult to the Atari. The colours are dreadful, sound non-existent apart from the brilliant theme music from master composer Rob Hubbard and the graphics are totally inferior to all other versions when we know they should be better, and the animation is a joke. Instead of the super smooth animation we are used to on the Atari, the characters move around in a jerky, stop-start motion which manages to look passable until you compare it with the Spectrum/Commodore versions. Come off it Tynesoft you can do better than this. Commodore and Spectrum owners will laugh their socks off when they see it and that's the last thing the Atari needs. Can you imagine what the mainstream 'anti-Atari' computer press are going to say should they get their hands on a review copy? They seldom miss a chance to put the Atari down.

Please try again Tynesoft – we need your continued support – but no more conversions. Stick to original material until you get to know the machine a lot better. If you want to see how it's done, take a look at STARQUAKE from Bubble Bus.

KNOCKOUT

Anco
1 player
1 joystick

I'm not a great boxing fan. I rate it as one of the most boring sports on earth (next to cricket) and the only people I considered worth watching were Ali in his heyday and the brilliant Sugar Ray Leonard who had more talent in his big toe than every other boxer in history put together. Obviously I don't expect anyone to agree with me and so now that I've upset fight fanatics everywhere (my good deed for 1987) it's on with the job of reviewing KNOCKOUT, a boxing simulation from Anco.

It's a slugging match this one and gives you, the challenger, the chance to take on the top 8 Heavyweights in the world in order of merit and, hopefully, work your way up through the ranks to get a shot at that all-important title against the World's No.1, Smart 'Hey, don't push me' Stallone.

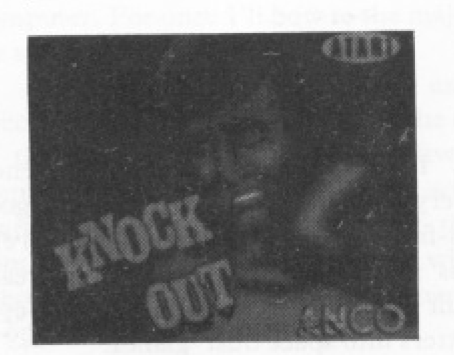
It looks decent enough at first – a view from behind your boxer, looking directly across the ring, with the crowd in the background and a couple of realistic 'mug shots' of the competitors in the top corners of the screen – but all this is subsequently cancelled out by the poor graphics of the boxers themselves. Your opponent is a crudely drawn outline and your own boxer is done in unusual wire-frame graphics, making him look like a half-finished version of the bionic man. There is virtually no animation at all – the boxers don't move around the ring but stand on the spot slugging it out in true heavyweight style (yawn!).

The fighters are super-imposed on top of each other but, in spite of your wire-frame body, it's still difficult to make out your opponent and totally impossible to tell who's hitting who. Tactics aren't this game's strong point. Jabs? Hooks?...... what's the difference when you can't see them anyway?

Sound effects are limited to the dull thud of the punches and also the cheering crowd, which actually sounds like waves breaking on a Cornish beach. This could have been the first computer surfing game if it weren't for the graphics!!

Opponents have to be loaded from tape after a couple of bouts on the cassette version, which makes me wonder where all the memory's gone. It's not as if large chunks of Ram are wasting away on fancy animation!

Unfortunately, there aren't many other alternatives on the market for fans of this type of game, particularly if you have a cassette-based system. Disk owners are advised to check out FIGHT NIGHT from US Gold as it's a much better prospect. Know what I mean Harry?



CRYSTAL RAIDER

Mastertronic
£2.99 cassette
1 player
1 joystick



Question – 'When is an arcade adventure not an arcade adventure?'. Answer – 'When it's Mastertronic's CRYSTAL RAIDER'.

At first glance it looks like one of those familiar arcade adventure games where you travel through room after room, collecting various objects, in order to achieve some predetermined goal. There's more to it than first meets the eye though and the cleverly worded scenario on the cassette inlay gives you a few hints on how to tackle this one. Quote: 'CRYSTAL RAIDER is not an arcade adventure. It is in fact a set of logic puzzles and should be approached that way'.

You control a small character who possesses phenomenal jumping powers and you must guide him safely through 50 different rooms collecting all the quartz crystals he can lay his hands on. Pressing the fire button causes him to rise up in the air and he will continue in an upward direction until he strikes an immovable object or you let go of the button. You have full control of his movement in the air thus giving him access to all the crystals and parts of the room which are otherwise impossible to reach.

Fire-pits are a potentially lethal hazard and the rooms are also inhabited by killer snakes and other nasties. You must plan your route carefully to avoid these dangers, bearing in mind that all the crystals have to be collected eventually in order to complete the game. You can exit a room at any time but you gain an extra life for clearing a room of it's quota of crystals, so it's worth the risk particularly when you consider that there are 50 extra lives there for the taking. This gives you a maximum possible total of 55 lives and Mastertronic warn that even this may not be enough. From what I've seen 550 lives may not be enough!!

CRYSTAL RAIDER doesn't have the instant appeal of either NINJA or LA SWAT but it's got far more staying power. You'll still be playing it long after you've tired of the other two. Mastertronic have another winner on their hands here. •

How to Type in the Listings

and get them right!

The program listings in PAGE 6 are prepared carefully to ensure that they can be typed in as easily as possible. Before typing any listings ensure that you are familiar with the use of the Shift and CONTROL and INVERSE keys as outlined in your computer manual. The listings are prepared to match exactly what you see on screen. Every character that you may see in a listing is included in the chart below for cross reference. By using TYPO 3 you can ensure that you type in the programs EXACTLY as they are printed. Remember a single typing mistake may mean a program will not run.

WHAT ARE THOSE CODES?

Each line of a program begins with a special two letter code. THESE SHOULD NOT BE TYPED IN. They are used by the program TYPO to check that you have typed each line correctly. IF YOU HAVE NOT ALREADY TYPED IN THE TYPO 3 LISTING PLEASE DO SO NOW. The program can be used as you type in each line of a program or to check an already typed program. The code for each line will match but if you have problems check the listing conventions below carefully, you are most probably typing a CONTROL character incorrectly. TYPO 3 cannot check if a line has been missed so if you have problems in running a listing count the lines in the program and ensure none are missing. If the TYPO codes match and the program still does not run, LIST it to cassette or disk using LIST "C:" or LIST "D:filename", switch off the computer, re-boot and then ENTER the program using ENTER "C:" or ENTER "D:filename". Save this version in the normal way.

HOW TO USE TYPO 3

1. Type in the listing carefully for although you can use TYPO 3 to check itself (see 6 below) it may not work if you have made mistakes.

2. SAVE or CSAVE a copy of the program.

3. Each time you want to type in a program listing RUN TYPO 3 *first*. The program will install a machine code routine in memory and then delete itself. Now type in a line as shown in the magazine *excluding the first two letter code* and press RETURN.

4. A two letter code will appear at the top left of your screen. If this code matches the one in the magazine carry on and type the next line. Note, the code will not match if you use abbreviations. If you prefer to use abbreviations LIST the line you have just typed, move the cursor to that line and press RETURN. The code should now match.

5. If the code does not match, use the editing keys to correct the line and press RETURN again. Repeat if necessary until the codes match.

6. To check a line you have already typed LIST the line, place the cursor on that line and press RETURN.

7. When you have finished a listing just SAVE or CSAVE it in the normal way.

You can type in a program without using TYPO 3 and then check it by SAVEing or CSAVEing a copy of the program, running TYPO 3 and then LOADing or CLOADing your program and proceeding as in step 6 above.

Always SAVE or CSAVE a program before running it and always use TYPO before telling us that a program will not run.

```
EI 1 REM ************************************
AL 2 REM *  TYPO III by Alec Benson     *
         *          June 1985           *
SA 3 REM * A proofreader for ANTIC and *
         *   PAGE 6 based'on TYPO II   *
         * published by ANTIC magazine *
EL 4 REM ************************************
SG 100 GRAPHICS 0
WG 110 FOR I=1536 TO 1791:READ A:CK=CK+A:
   POKE I,A:NEXT I
CG 120 IF CK<>30765 THEN ? "Error in DATA
    statements - Check Typing":END
YM 130 A=USR(1536)
VT 140 ? :? "TYPO III is up and running":
   NEW
MA 1000 DATA 104,160,0,185,26,3,201,69
HG 1010 DATA 240,8,200,200,200,192,36,208
OB 1020 DATA 242,96,200,169,79,153,26,3
RK 1030 DATA 200,169,6,153,26,3,162,0
RR 1040 DATA 189,0,228,157,79,6,232,224
TO 1050 DATA 15,208,245,169,93,141,83,6
KC 1060 DATA 169,6,141,84,6,173,4,228
EU 1070 DATA 105,0,141,95,6,173,5,228
BK 1080 DATA 105,0,141,96,6,169,0,162
KK 1090 DATA 3,149,203,202,16,251,96,0
ZR 1100 DATA 0,0,0,0,0,0,0,0
LD 1110 DATA 0,0,0,0,0,0,32,94
JM 1120 DATA 6,8,72,201,155,240,55,230
TV 1130 DATA 203,133,209,138,72,169,0,133
TW 1140 DATA 208,162,8,10,38,208,6,209
MF 1150 DATA 144,7,24,101,203,144,2,230
RL 1160 DATA 208,202,208,239,133,207,24,1
   65
TM 1170 DATA 204,101,207,133,204,165,205,
   101
AW 1180 DATA 208,133,205,165,206,105,0,13
   3
XH 1190 DATA 206,104,170,104,40,96,138,72
WR 1200 DATA 152,72,162,0,134,207,134,208
GF 1210 DATA 160,24,6,204,38,205,38,206
EA 1220 DATA 38,207,38,208,56,165,207,233
TM 1230 DATA 164,170,165,208,233,2,144,4
SK 1240 DATA 134,207,133,208,136,208,227,
   162
CB 1250 DATA 8,165,207,133,204,165,208,6
XN 1260 DATA 204,42,201,26,144,4,233,26
MB 1270 DATA 230,204,202,208,242,133,205,
   169
BC 1280 DATA 128,145,88,200,192,40,208,24
   9
WV 1290 DATA 165,204,105,160,160,3,145,88
OA 1300 DATA 165,205,24,105,161,200,145,8
   8
MQ 1310 DATA 32,69,6,104,168,76,153,6
```

Lower case	Inverse lower	Upper case or Shift	Inverse Upper or Shift	CTRL	Inverse CTRL
1	inv. 1	!	inv. !		
2	inv. 2	"	inv. "		
3	inv. 3	#	inv. #		
4	inv. 4	$	inv. $		
5	inv. 5	%	inv. %		
6	inv. 6	&	inv. &		
7	inv. 7	'	inv. '		
8	inv. 8	@	inv. @		
9	inv. 9	(	inv. (		
0	inv. 0	)	inv.)		
<	inv. <				
>	inv. >				
a	inv. a	A	inv. A	[graphic]	[graphic]
b	inv. b	B	inv. B	[graphic]	[graphic]
c	inv. c	C	inv. C	[graphic]	[graphic]
d	inv. d	D	inv. D	[graphic]	[graphic]
e	inv. e	E	inv. E	[graphic]	[graphic]
f	inv. f	F	inv. F	[graphic]	[graphic]
g	inv. g	G	inv. G	[graphic]	[graphic]
h	inv. h	H	inv. H	[graphic]	[graphic]
i	inv. i	I	inv. I	[graphic]	[graphic]
j	inv. j	J	inv. J	[graphic]	[graphic]
k	inv. k	K	inv. K	[graphic]	[graphic]
l	inv. l	L	inv. L	[graphic]	[graphic]
m	inv. m	M	inv. M	[graphic]	[graphic]
n	inv. n	N	inv. N	[graphic]	[graphic]
o	inv. o	O	inv. O	[graphic]	[graphic]
p	inv. p	P	inv. P	[graphic]	[graphic]
q	inv. q	Q	inv. Q	[graphic]	[graphic]
r	inv. r	R	inv. R	[graphic]	[graphic]
s	inv. s	S	inv. S	[graphic]	[graphic]
t	inv. t	T	inv. T	[graphic]	[graphic]
u	inv. u	U	inv. U	[graphic]	[graphic]
v	inv. v	V	inv. V	[graphic]	[graphic]
w	inv. w	W	inv. W	[graphic]	[graphic]
x	inv. x	X	inv. X	[graphic]	[graphic]
y	inv. y	Y	inv. Y	[graphic]	[graphic]
z	inv. z	Z	inv. Z	[graphic]	[graphic]
-	inv. -	_	inv. _		
=	inv. =	|	inv. |		
;	inv. ;	:	inv. :	[graphic]	[graphic]
+	inv. +	\	inv. \		
*	inv. *	^	inv. ^		
,	inv. ,	[	inv. [	[graphic]	[graphic]
.	inv. .	]	inv.]	[graphic]	[graphic]
/	inv. /	?	inv. ?		

(symbol) ESC ESC
(symbol) ESC CTRL -
(symbol) ESC CTRL =
(symbol) ESC CTRL +
(symbol) ESC CTRL *
(symbol) ESC SHIFT CLEAR
(symbol) ESC DELETE
(symbol) ESC TAB
(symbol) ESC SHIFT DELETE
(symbol) ESC SHIFT INSERT
(symbol) ESC CTRL TAB
(symbol) ESC SHIFT TAB
(symbol) ESC CTRL 2
(symbol) ESC CTRL DELETE
(symbol) ESC CTRL INSERT

(symbol) INVERSE SPACE

Designer Labels

Add some pazazz to your labels

Programs to make labels abound but most only give a straight forward printout of the data or directory. Designer Labels changes all that, at least for those with Epson printers, because it allows you to enclose the information in a professional looking box that tells you clearly what is on each side of the disk. It also allows you the option of numbering the label.

The information to be printed can be entered on the screen or read from disk by the program. Designer Labels is able to read DOS directories as well as Multi-boot directories. It is not able to read any disk which is formatted in true double density but it will read enhanced/DOS 2.5 directories. If anyone has a simple basic routine to configure the program to read a disk formatted in double density I would appreciate a copy.

When information is entered from the screen you have three label sizes, large, medium and small however when reading a directory you are limited to two print sizes, medium and small.

With Large, only available when in screen input mode, the label has space for one line of fourteen letters and two lines of fifteen letters on each side. In medium mode the label has space for two lines of twenty nine letters and two lines of thirty two letters on each side whilst in Small the limitations of the screen size mean that you are limited to four lines of thirty seven letters on each side when entering information from the screen. When reading a directory however the program has space for two lines of forty nine letters and two lines of fifty four letters on each side.

As listed, the program prints A and B on the label to differentiate between sides. If you prefer to put 1 and 2 or indeed any single number/letter in their place then in line 7050 change the sixty fifth character to the letter or number of your choice for the first side and in line 7110 change the thirty seventh letter to the letter of your choice for the second side.

To make it easier to enter the various codes needed to initialize the printer a second program, LABELMAKER is given. It uses the Atari Computer forced read mode to print the Ascii codes and then list the lines created to disk under the file name 'LABEL.LST'. This can then be ENTERed with the main program.

```
A   ADJSTOP TIE XWING COMPUTER GRBTEXT SCROLL1
    SCROLL2 GR10X7 SCROLL3 SPLASH XLDEMO SOLIDS
SHUTTLE ROT3D BARCHART AUDCTL MINICOM3 BALLDROP
SOUNDFX SYNDRUM DLISCROL GTIADEMO BASSNOTE MODE123
MUSICEND TABDEMO SOUNDEMO

B   ASSEMBLE TOUCHTYP TYPEBEGI TYPEINAD TYPE1 TYPE2
    TYPE3 HFINMAN PMGEN COMPDESI TEXTPLOT PLAYER
DEFAULT SINE1 SINE2 PMCURSOR FILEMAKR FCREATE
RECOVERY CLOCKSET CLOCK1 TAXSFILE PRICELES CURSOR2
PATCHED UNICHECK PAINTER
```

```
EI 1 REM ********************************
CP 2 REM *       LABEL$ MAKER FOR       *
TP 3 REM *       DESIGNERS LABELS       *
EB 4 REM * ---------------------------- *
IY 5 REM *  PAGE 6 MAGAZINE - ENGLAND   *
EN 6 REM ********************************
OJ 10 REM  SET UP DATA IN LABEL$
KK 20 DIM LABEL$(2205),A$(760)
GF 30 LABEL$(1)=CHR$(40):LABEL$(1439)=CHR
   $(40):LABEL$(2)=LABEL$:A$(1)=CHR$(0):A
   $(760)=CHR$(0):A$(2)=A$
JR 35 LABEL$(1429,2189)=A$
QN 40 RESTORE 6000:FOR A=1 TO 2205:READ B
DM 50 IF A=16 THEN A=48
LP 60 IF A=52 THEN A=402
RA 70 IF A=454 THEN A=486
RD 80 IF A=526 THEN A=558
LU 90 IF A=562 THEN A=912
YH 100 IF A=966 THEN A=998
AQ 105 IF A=1038 THEN A=1424
ED 110 IF A=1432 THEN A=1781
KR 120 IF A=1785 THEN A=2169
UA 140 LABEL$(A,A)=CHR$(B):NEXT A
LA 160 B=0:C=0
BN 170 FOR D=7010 TO 7250 STEP 10:B=C+1:C
   =B+89:IF B=2161 THEN C=2205
TF 180 ? CHR$(125):POKE 766,1
LK 190 POSITION PEEK(82),2:? D;"LABEL$(";
   B;",";C;")=";CHR$(34);LABEL$(B,C);CHR$
   (34)
RY 200 ? "CONT"
SH 210 POSITION PEEK(82),0:POKE 842,13:ST
   OP
DC 220 POKE 842,12:POKE 766,0
EA 230 NEXT D
GM 250 LIST "D:LABEL.LST",7000,7260
OD 260 END
OA 6000 REM DATA STMTS
SX 6010 DATA 27,64,27,49,27,108,5,27,76,1
   38,1,63,32,32,47,47,32,32,47,47,32,32,
   63
TT 6030 DATA 27,76,10,0,255,0,0,255,0,0,0
   ,0,0,0,27,69,27,71,14,65,27,76,8,0,0,0
   ,255,0,0,255,0,0
XV 6050 DATA 27,76,4,0,255,0,0,255,27,76,
   42,0,255,0,0,239,224,8,8,248,0,0,27,76
   ,4,0,255,0,0,255
PC 6080 DATA 27,76,6,0,255,0,0,255,0,0,27
   ,76,4,0,255,0,0,255
GB 6100 DATA 27,76,138,1,255,0,0,239,47,3
   2,32,47,239,0,0,255,27,76,10,0,255,0,0
   ,255,0,0,0,0,0,0,27,84,27,69,27,71,14
QY 6120 DATA 66,27,76,8,0,0,0,255,0,0,255
   ,0,0,27,76,4,0,255,0,0,255,27,76,42,0,
   255,0,0,239
DV 6150 DATA 224,8,8,248,0,0,27,76,4,0,25
   5,0,0,255
OY 6160 DATA 27,76,6,0,255,0,0,255,0,0,27
   ,76,4,0,255,0,0,255
AC 6180 DATA 27,76,138,1,248,8,8,224,224,
   8,8,248
ZF 6190 DATA 27,76,92,1,27,76,128,1,27,76
   ,12,0,0,0,0,0,0,0,0,0,0,0,0,0,27,69,27
   ,71,14
AF 6200 DATA 27,64,27,108,5,27,70,27,20,2
   7,65,8,15,27,83,1
CK 7000 REM  LABEL$
BB 7260 RETURN
```

by Gordon Sinclair

```
EI 1 REM ********************************
GH 2 REM *  DESIGNER LABELS Vers. 6.0  *
LK 3 REM *  FOR EPSON PRINTERS         *
HM 4 REM *  by Gordon Sinclair, Elgin  *
EC 5 REM * ---------------------------- *
IZ 6 REM *  PAGE 6 MAGAZINE - ENGLAND  *
EO 7 REM ********************************
AY 10 REM
FO 40 DIM A$(9),B$(10),C$(16),D$(5),E$(25
   ),F$(201),G$(128),H$(56),I$(20),LABEL$
   (2205):GOSUB 7000
NT 50 DATA 27,76,5,0,0,0,0,0,27,76,6,0,
   0,0,0,0,0,27,76,12,0,0,0,0,0,0,0,0,0
   ,0,0,0,0,104,32,83,228,96
VK 60 FOR A=1 TO 9:READ B:A$(A,A)=CHR$(B)
   :NEXT A:FOR A=1 TO 10:READ B:B$(A,A)=C
   HR$(B):NEXT A
EA 70 FOR A=1 TO 16:READ B:C$(A,A)=CHR$(B
   ):NEXT A:FOR A=1 TO 5:READ B:D$(A,A)=C
   HR$(B):NEXT A
KD 80 DIM K$(58),L$(58),M$(58),N$(58),O$(
   58),P$(58),Q$(58),R$(58),S$(58),T$(11)
   ,U$(382)
XJ 90 U$=CHR$(40):U$(382)=CHR$(40):U$(2)=
   U$:G$(1)=CHR$(0):G$(128)=CHR$(0):G$(2)
   =G$
LF 100 C=0:D=0:E=0:F=0:G=0:H=0:I=0:J=0:K=
   1:L=0
HH 110 H$(1)=CHR$(18):H$(56)=CHR$(18):H$(
   2)=H$:GOTO 130
NH 120 OPEN #2,4,0,"K:":GET #2,M:CLOSE #2
   :RETURN
ZF 130 GRAPHICS 0:POKE 710,240:POKE 752,1
KV 140 POSITION 14,2:? "Label Maker":POSI
   TION 18,4:? "by":POSITION 12,6:? "Gord
   on Sinclair"
UQ 150 POSITION 9,10:? "Do you wish to nu
   mber "
KB 160 POSITION 9,12:? "   the Disk ? (Y/
   N)   ":GOSUB 120:IF M<>78 AND M<>89 TH
   EN GOTO 160
XV 170 IF M=78 THEN N=0:GOTO 270
BC 180 POKE 710,80:POKE 709,200:POSITION
   9,10:? " Input Disk Number    ":POSITI
   ON 9,12:? "  and Press Return    "
EJ 190 POSITION 9,14:? "    Disk - (   )
   ":A=1:T$(1,7)="Disk - "
AO 200 GOSUB 120:IF M=155 THEN 240
KV 210 POSITION 20+A,14:? CHR$(M):T$(7+A,
   7+A)=CHR$(M):A=A+1:IF A>4 THEN T$(8,11
   )="    ":GOTO 230
LV 220 GOTO 200
ZQ 230 POSITION 9,14:? "Maximum of 3 fig
   ures":FOR O=1 TO 200:NEXT O:GOTO 190
BD 240 POKE 710,90:POKE 709,20
WM 250 POSITION 9,10:? " Is the Disk Numb
   er    ":POSITION 9,12:? "  Correct (Y/
   N)    ":GOSUB 120:IF M=78 THEN 180
UW 260 N=1:IF M<>89 THEN 250
KM 270 POKE 710,50:POKE 709,200:POSITION
   9,10:? "1 Screen Input          "
TY 280 POSITION 9,12:? "2 Disk Directory
   - Dos"
AD 290 POSITION 9,14:? "3 Multi-Boot Dire
   ctory"
RM 300 GOSUB 120
N5 310 IF M=49 THEN 350:REM SCREEN INPUT
OM 320 IF M=50 THEN E=1:P=-1:GOTO 1000
PV 330 IF M=51 THEN J=1:P=2:GOTO 1250
MK 340 GOTO 300
UK 349 REM  SCREEN INPUT
B5 350 REM  SELECT PRINT SIZE
KJ 360 POKE 710,30:POKE 709,20:POSITION 9
   ,10:? "1 Large Print  - 15*3 "
Z5 370 POSITION 9,12:? "2 Medium Print -
   32*4 "
RJ 380 POSITION 9,14:? "3 Small Print  -
   37*4 "
UJ 390 POSITION 9,18:? "    Screen  Input
    "
RN 400 GOSUB 120
U5 410 IF M=49 THEN C=1:Q=4:R=8:S=7:T=11:
   U=26:V=7:W=11:GOTO 810
GB 420 IF M=50 THEN F=1:Q=4:R=9:S=8:T=12:
   U=37:V=8:W=13:GOTO 810
DH 430 IF M=51 THEN D=1:Q=2:R=7:S=6:T=10:
   U=38:V=6:W=11:X=1:GOTO 810
MV 440 GOTO 400
UL 449 REM  SCREEN INPUT
GL 450 REM  READ KEYBOARD
RZ 460 GOSUB 120
HM 470 IF M=125 THEN 460
QD 480 IF M=28 AND PEEK(84)=Q THEN 460
KA 490 IF M=28 AND PEEK(84)=R THEN ? CHR$
   (28);
MJ 500 IF M=29 AND PEEK(84)=S THEN ? CHR$
   (29);
TB 510 IF M=29 AND PEEK(84)=T THEN 460
OU 520 IF C THEN GOSUB 610
UI 530 IF F THEN GOSUB 640
JW 540 IF M=159 OR M=157 THEN 460
UF 550 IF M=27 THEN POKE 752,1:GOTO 680:R
   EM READ LABEL ROUTINE
PI 560 ? CHR$(M);
ZF 570 IF PEEK(85)=U THEN ?
HN 580 IF PEEK(84)=V THEN ? CHR$(29);
HA 590 IF PEEK(84)=W THEN ? CHR$(28);
PD 600 GOTO 460
JX 610 IF PEEK(85)=11 AND PEEK(84)=4 THEN
    ? CHR$(31);:RETURN
PB 620 IF PEEK(85)=11 AND PEEK(84)=8 THEN
    ? CHR$(31);:RETURN
ZI 630 RETURN
ZG 640 IF PEEK(85)=7 AND PEEK(84)=4 OR PE
   EK(85)=6 AND PEEK(84)=4 OR PEEK(85)=5
   AND PEEK(84)=4 THEN ? CHR$(31);:RETURN
IN 650 IF PEEK(85)=7 AND PEEK(84)=9 OR PE
   EK(85)=6 AND PEEK(84)=9 OR PEEK(85)=5
   AND PEEK(84)=9 THEN ? CHR$(31);:RETURN
ZO 660 RETURN
LP 669 REM  SCREEN INPUT
AG 670 REM  READ LABELS ON SCREEN
RU 680 IF C THEN Y=10:Z=3:A1=2:B1=15:GOTO
    760
KW 690 IF F THEN Y=4:Z=3:A1=4:B1=32:GOTO
   760
IN 700 IF D THEN Y=0:Z=1:A1=1:B1=37:GOTO
   760
DF 710 H$=" ":H$(56)=" ":H$(2)=H$
CV 720 IF C AND I=2 THEN A1=1
CK 730 IF C AND I=4 OR C AND I=8 OR C AND
    I=9 THEN RETURN
AI 740 IF I>=5 AND D OR I>=5 AND F THEN I
   =I+1
IX 750 POSITION Y,I+Z:POKE 764,12:INPUT H
   $:POSITION Y,I+Z:? "|";:RETURN
XF 760 I=1:GOSUB 710:K$=H$(A1,B1):I=2:GOS
   UB 710:L$=H$(A1,B1):I=3:GOSUB 710:M$=H
   $(1,B1)
NJ 770 I=4:GOSUB 710:N$=H$(1,B1):I=5:GOSU
   B 710:O$=H$(A1,B1):I=6:GOSUB 710:P$=H$
   (A1,B1)
CH 780 I=7:GOSUB 710:Q$=H$(1,B1):I=8:GOSU
   B 710:R$=H$(1,B1)
WU 790 CLOSE #1:POKE 83,39:POKE 82,2:? CH
   R$(125):GOTO 1840:REM PRINTOUT LABEL
UY 799 REM  SCREEN INPUT
NK 800 REM  SET UP LABELS
FB 810 CLOSE #1:OPEN #1,12,0,"S:":POKE 71
   0,30:POKE 709,20
SM 820 IF D THEN C1=1:D1=2:POKE 82,0:POKE
    83,39:GOTO 880
RD 830 IF F THEN C1=8:D1=4:POKE 82,4:POKE
    83,38:GOTO 910
FG 840 IF C THEN C1=12:D1=4:POKE 82,10:PO
   KE 83,27
NF 849 REM  LARGE LABEL 2*15*3 GRIDS
KI 850 ? :? :? :? "┌┬";H$(43);"┐":? "├
              |":FOR E1=1 TO 2:? "|
        |":NEXT E1
IQ 860 ? "├┼";H$(43);"┤":? "├
    |":FOR E1=1 TO 2:? "|
    |":NEXT E1:? "└";H$(42);"┘"
UC 870 POKE 82,11:POKE 83,26:GOTO 970
YL 879 REM  SMALL LABEL 2*37*4 GRIDS
YQ 880 ? :? "┌";H$(20);"┐":GOSUB 900:? "├
   ";H$(20);"┤":GOSUB 900:? "└";H$(20);"┘
   ":POKE 82,1:POKE 83,38
SG 890 GOTO 970
CO 900 FOR E1=1 TO 4:? "|
                 |":NEXT E1:RETURN
5X 909 REM  MEDIUM LABEL 2*32*4 GRIDS
LV 910 ? :? :? :? "┌┬┬┬";H$(28);"┐":? "├┼
   ┼                  |":? "├
   ┴┴┴                |"
HN 920 FOR E1=1 TO 2:? "|
               |":NEXT E1
FH 930 ? "├┼┼┼";H$(28);"┤":? "├┼┼┼
               |":? "├┴┴┴
   |"
HR 940 FOR E1=1 TO 2:? "|
               |":NEXT E1
OD 950 ? "└";H$(25);"┘"
GA 960 POKE 82,5:POKE 83,37
W5 970 POSITION 9,14:? "Press ESC to Prin
   t":POSITION C1,D1:? "→←";:GOTO 460
JO 980 REM  DIRECTORY INPUT
QP 990 REM  DISK DIRECTORY
FI 1000 POKE 710,90:POKE 709,20:POSITION
   9,10:? "1 Medium Print - 31*4 "
YD 1010 POSITION 9,12:? "2 Small Print  -
    37*4 "
C5 1020 POSITION 9,14:? "
    "
ZU 1030 POSITION 9,18:? "     Disk Directo
   ry "
CY 1040 GOSUB 120:IF M<>49 AND M<>50 THEN
    1040
DW 1050 F1=1:G1=54:H1=5:D=1:IF M=49 THEN
   F=1:G1=32:H1=3:D=0
5V 1060 POSITION 9,10:? " Place Disk - Si
   de A  "
EF 1070 POSITION 9,12:? " in Drive 1 - Pr
   ess  "
NU 1080 POSITION 9,14:? "       RETURN
HE 1090 GOSUB 120:IF M<>155 THEN 1090
MJ 1100 TRAP 1210
EY 1110 A=1:I1=1:CLOSE #1:OPEN #1,6,0,"D:
   *.*"
QC 1120 POKE 710,160:POKE 709,200:POSITIO
   N 9,14:? "     READING     "
RQ 1130 FOR J1=1 TO 64:I$="
      ":INPUT #1,I$:REM 20 SPACES IN
   FILE$
XI 1140 IF I$(11,13)="SYS" THEN NEXT J1
UH 1150 IF I$(5,8)="FREE" AND I1>=5 THEN
   J1=64:GOTO 1790:REM PRINTOUT LABEL
CM 1160 IF I$(5,8)="FREE" THEN J1=64:L=1:
   GOTO 1690:REM INPUT SIDE 2
AP 1170 FOR K1=4 TO 10:IF I$(K1,K1)=" " T
   HEN L1=K1-1:K1=10:GOTO 1190
WB 1180 NEXT K1:L1=10
DE 1190 E$="                "
XY 1200 E$=I$(3,L1):GOTO 1500
DO 1210 POKE 710,30:POSITION 10,14:? "
       ERROR     "
OP 1220 ? " ":POSITION 9,10:? "Error in R
   eading Drive":POSITION 9,12:? "  Plea
   se try again  "
DD 1230 FOR O=1 TO 250:NEXT O:IF L THEN 1
   730
UY 1240 POKE 710,90:POKE 709,20:GOTO 1060
OZ 1249 REM  DIRECTORY INPUT
YH 1250 REM  MULTIBOOT DIRECTORY
GE 1260 POKE 710,90:POKE 709,20:POSITION
   9,10:? "1 Medium Print - 31*4 "
YZ 1270 POSITION 9,12:? "2 Small Print  -
    37*4 "
DO 1280 POSITION 9,14:? "
    "
GE 1290 POSITION 9,18:? "Multi-Boot Direc
   tory"
AZ 1300 GOSUB 120:IF M<>49 AND M<>50 THEN
    1300
DQ 1310 F1=1:G1=54:H1=5:D=1:IF M=49 THEN
   F=1:G1=32:H1=3:D=0
SP 1320 POSITION 9,10:? " Place Disk - Si
   de A  "
DZ 1330 POSITION 9,12:? " in Drive 1 - Pr
   ess  "
NO 1340 POSITION 9,14:? "       RETURN
    "
FO 1350 GOSUB 120:IF M<>155 THEN 1350
OS 1360 POKE 710,160:POKE 709,200:POSITIO
   N 9,14:? "     READING     "
DL 1370 F$(1)=" ":F$(201)=" ":F$(2)=F$
OW 1380 M1=48:H=1:I1=1:A=1:B=1:IF K=2 THE
   N I1=5
IC 1390 POKE 772,ADR(G$)-INT(ADR(G$)/256)
   *256:POKE 773,INT(ADR(G$)/256):POKE 76
   9,1:POKE 770,82
OL 1400 POKE 778,M1-INT(M1/256)*256:POKE
   779,INT(M1/256)
TM 1410 N1=USR(ADR(D$))
UC 1411 IF H=1 AND G$(11,11)<>"2" THEN PO
   SITION 9,14:? "      ERROR     ":FOR
    O=1 TO 250:NEXT O:GOTO 1340
BN 1420 IF H=1 THEN F$(1,98)=G$(31,128):H
   =2:M1=49:GOTO 1390
YG 1430 F$(99,201)=G$(1,103):FOR Z=1 TO L
   EN(F$):IF F$(Z,Z)="♥" THEN 1450
MO 1440 NEXT Z
YH 1450 FOR J1=1 TO 15:IF B>=Z AND K=2 TH
   EN POP :GOTO 1800:REM PRINTOUT
FP 1460 IF B>=Z THEN 1690:REM SIDE 2
```

```
SN 1470 E$=F$(B,B+19):B=B+20:FOR L1=20 TO
    2 STEP -1:IF E$(L1,L1)=" " THEN NEXT
   L1
OC 1480 GOTO 1500
IC 1490 H$=" ":H$(56)=" ":H$(2)=H$:RETURN
JB 1500 IF A=1 AND I1=1 OR A=1 AND I1=5 T
   HEN GOSUB 1490
JF 1510 IF I1=1 AND A+L1<=G1-H1 THEN 1680
KR 1520 IF I1=1 AND A+L1>=G1-H1 THEN I1=2
   :A=1:K$=H$(1,G1-H1):GOSUB 1490:GOTO 16
   80
JX 1530 IF I1=2 AND A+L1<=G1-H1 THEN 1680
ON 1540 IF I1=2 AND A+L1>=G1-H1 THEN I1=3
   :A=1:L$=H$(1,G1-H1):GOSUB 1490:GOTO 16
   80
FV 1550 IF I1=3 AND A+L1<=G1 THEN 1680
KP 1560 IF I1=3 AND A+L1>=G1 THEN I1=4:A=
   1:M$=H$(1,G1):GOSUB 1490:GOTO 1680
GN 1570 IF I1=4 AND A+L1<=G1 THEN 1680
DG 1580 IF I1=4 AND A+L1>=G1 THEN I1=5:A=
   1:N$=H$(1,G1):GOSUB 1490:GOTO 1730
LZ 1590 IF I1=5 AND A+L1<=G1-H1 THEN 1680
YZ 1600 IF I1=5 AND A+L1>=G1-H1 THEN I1=6
   :A=1:O$=H$(1,G1-H1):GOSUB 1490:GOTO 16
   80
LP 1610 IF I1=6 AND A+L1<=G1-H1 THEN 1680
CV 1620 IF I1=6 AND A+L1>=G1-H1 THEN I1=7
   :A=1:P$=H$(1,G1-H1):GOSUB 1490:GOTO 16
   80
HN 1630 IF I1=7 AND A+L1<=G1 THEN 1680
XZ 1640 IF I1=7 AND A+L1>=G1 THEN I1=8:A=
   1:Q$=H$(1,G1):GOSUB 1490:GOTO 1680
IF 1650 IF I1=8 AND A+L1<=G1 THEN 1680
OO 1660 IF I1=8 AND A+L1>=G1 THEN R$=H$(1
   ,G1):GOTO 1840:REM PRINTOUT
ZK 1670 IF I1=9 AND A+O1<=56 THEN 1680
JV 1680 H$(A,A+L1)=E$:A=A+L1+P:NEXT J1
LW 1690 IF I1=1 THEN K$=H$(1,G1-H1)
MC 1700 IF I1=2 THEN L$=H$(1,G1-H1)
YZ 1710 IF I1=3 THEN M$=H$(1,G1)
AH 1720 IF I1=4 THEN N$=H$(1,G1)
DH 1725 FOR I=10 TO 14:POSITION 9,I:? "
                             ":NEXT I
DU 1730 POKE 710,90:POKE 709,20:POSITION
    9,10:? "Do you wish to catalog":? :? "
        Side B? (Y/N)"
BJ 1732 GOSUB 120:IF M<>89 THEN 1840
VK 1735 POSITION 9,10:? " Place Disk - Si
   de B "
EK 1740 POSITION 9,12:? " in Drive 1 - Pr
   ess "
NZ 1750 POSITION 9,14:? "        RETURN
   "
ME 1760 GOSUB 120:IF M<>155 THEN 1760
SH 1770 IF E THEN A=1:I1=5:CLOSE #1:OPEN
   #1,6,0,"D:*.*":GOTO 1120
PT 1780 K=2:GOTO 1360
QS 1790 IF I1=5 THEN O$=H$(1,G1-H1)
QY 1800 IF I1=6 THEN P$=H$(1,G1-H1)
DV 1810 IF I1=7 THEN Q$=H$(1,G1)
FD 1820 IF I1=8 THEN R$=H$(1,G1)
IV 1830 REM
TI 1840 REM      PRINTOUT ROUTINES
CA 1850 POKE 710,65:POKE 709,200:POSITION
    9,10:? "                        "
PE 1860 POSITION 9,12:? "Press any key to
    Print"
UR 1870 POSITION 9,14:? "
   "
XF 1880 GOSUB 120
RF 1890 POSITION 9,14:? "        PRINTING
   "
PZ 1900 TRAP 2080
RD 1910 CLOSE #1:OPEN #1,8,0,"P:"
QV 1920 IF N THEN ? #1;LABEL$(2190,2205);
   T$
QW 1930 ? #1;LABEL$(1,405);" ":? #1;LABEL
   $(406,437);CHR$(20);:GOSUB 2110:? #1;L
   ABEL$(438,445);" "
HL 1940 ? #1;LABEL$(446,491);:GOSUB 2110:
   ? #1;LABEL$(492,499);" ":GOSUB 1980:GO
   SUB 1980:IF C THEN GOSUB 1980
TY 1950 ? #1;LABEL$(518,915);" ":? #1;LAB
   EL$(916,949);CHR$(20);:GOSUB 2110:? #1
   ;LABEL$(950,957);" "
WY 1960 ? #1;LABEL$(958,1003);:GOSUB 2110
   :? #1;LABEL$(1004,1011);" ":GOSUB 1990
   :GOSUB 1990:IF C THEN GOSUB 1990
FV 1970 ? #1;LABEL$(1030,1427);" ":? #1;"
   ":GOTO 2030
AH 1980 ? #1;LABEL$(500,509);:GOSUB 2110:
   ? #1;LABEL$(510,517);" ":RETURN
PE 1990 ? #1;LABEL$(1012,1021);:GOSUB 211
   0:? #1;LABEL$(1022,1029);" ":RETURN
AT 2000 ? #1;LABEL$(1428,1780);:RETURN
DL 2010 ? #1;LABEL$(1781,2168);:RETURN
HS 2020 ? #1;LABEL$(2169,2189);:RETURN
KB 2030 POSITION 9,10:? "       Press
   "
DZ 2040 POSITION 9,12:? "        RETURN
   "
QW 2050 POSITION 9,14:? "    to run again
   ":POSITION 9,18:? "
   "
SV 2060 GOSUB 120:IF M<>155 THEN END
ZA 2070 K$="":L$="":M$="":N$="":O$="":P$=
   "":Q$="":R$="":S$="":GOTO 90
OC 2080 POSITION 9,14:? "        ERROR
   "
XJ 2090 ? "":POSITION 9,12:? " Printer
   Fault    "
HZ 2100 FOR O=1 TO 250:NEXT O:GOTO 1850
CC 2110 REM   SET UP STRINGS TO PRINT
BD 2120 IF  NOT C THEN ? #1;LABEL$(2197,2
   205);
JN 2130 G=G+1
BS 2140 IF G=1 AND K$="" THEN GOTO 2000
ER 2150 IF G=1 AND D AND X THEN ? #1;CHR$
   (27);CHR$(70);"    ";K$;"      ";A$;
   :RETURN
YC 2160 IF G=1 AND D THEN ? #1;CHR$(27);C
   HR$(70);K$;A$;:RETURN
VH 2170 IF G=1 AND C THEN ? #1;K$;C$;:RET
   URN
NA 2180 IF G=1 THEN ? #1;K$;:RETURN
GM 2190 IF G=2 AND C OR G=2 AND L$="" THE
   N 2000
EN 2200 IF G=2 AND D AND X THEN ? #1;"
   ";L$;"          ";A$;:RETURN
UK 2210 IF G=2 AND D THEN ? #1;L$;A$;:RET
   URN
NS 2220 IF G=2 THEN ? #1;L$;:RETURN
FE 2230 IF G=3 AND M$="" THEN GOTO 2010
CY 2240 IF G=3 AND C THEN GOSUB 2020:? #1
   ;L$;C$;:RETURN
GT 2250 IF G=3 AND D AND X THEN ? #1;"
   ";M$;"          ";B$;:RETURN
XT 2260 IF G=3 AND D THEN ? #1;M$;B$;:RET
   URN
PP 2270 IF G=3 THEN ? #1;M$;:RETURN
UE 2280 IF G=4 AND C OR G=4 AND N$="" THE
   N GOTO 2010
JK 2290 IF G=4 AND D AND X THEN ? #1;"
   ";N$;"          ";B$;:RETURN
YR 2300 IF G=4 AND D THEN ? #1;N$;B$;:RET
   URN
QH 2310 IF G=4 THEN ? #1;N$;:RETURN
FY 2320 IF G=5 AND O$="" THEN GOTO 2000
FH 2330 IF G=5 AND C THEN GOSUB 2020:? #1
   ;M$;C$;:RETURN
PM 2340 IF G=5 AND D AND X THEN ? #1;CHR$
   (27);CHR$(70);"    ";O$;"      ";A$;
   :RETURN
HB 2350 IF G=5 AND D THEN ? #1;CHR$(27);C
   HR$(70);O$;A$;:RETURN
SE 2360 IF G=5 THEN ? #1;O$;:RETURN
HP 2370 IF G=6 AND P$="" THEN GOTO 2000
CD 2380 IF G=6 AND C THEN ? #1;O$;C$;:RET
   URN
NQ 2390 IF G=6 AND D AND X THEN ? #1;"
   ";P$;"          ";A$;:RETURN
AP 2400 IF G=6 AND D THEN ? #1;P$;A$;:RET
   URN
SZ 2410 IF G=6 THEN ? #1;P$;:RETURN
JN 2420 IF G=7 AND Q$="" THEN GOTO 2010
WQ 2430 IF G=7 AND C THEN GOTO 2000
PO 2440 IF G=7 AND D AND X THEN ? #1;"
   ";Q$;"          ";B$;:RETURN
DY 2450 IF G=7 AND D THEN ? #1;Q$;B$;:RET
   URN
UW 2460 IF G=7 THEN ? #1;Q$;:RETURN
LE 2470 IF G=8 AND R$="" THEN GOTO 2010
LV 2480 IF G=8 AND C THEN GOSUB 2020:? #1
   ;P$;C$;:RETURN
SI 2490 IF G=8 AND D AND X THEN ? #1;"
   ";R$;"          ";B$;:RETURN
EZ 2500 IF G=8 AND D THEN ? #1;R$;B$;:RET
   URN
VR 2510 IF G=8 THEN ? #1;R$;:RETURN
JD 2520 IF G=9 AND C THEN 2010
XY 2530 IF G=10 AND C THEN GOSUB 2020:? #
   1;Q$;C$;:RETURN
CK 7000 REM  LABELS
DX 7010 LABEL$(1,90)="[graphics]((((((((((((((((((((((((((((((((((((((((((((((((((((((((((("
EB 7020 LABEL$(91,180)="((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((("
CT 7030 LABEL$(181,270)="((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((("
CU 7040 LABEL$(271,360)="((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((("
VK 7050 LABEL$(361,450)="(((((((((((((((((((((((((((((((((((((((/ [graphics]"
UC 7060 LABEL$(451,540)="[graphics]"
ZS 7070 LABEL$(541,630)="((((((((((((((((((/ /(((((((((((((((((((((((((((((((((((((((((((((((("
CY 7080 LABEL$(631,720)="((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((("
CZ 7090 LABEL$(721,810)="((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((("
BY 7100 LABEL$(811,900)="((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((("
RB 7110 LABEL$(901,990)="((((((((((([graphics]"
TQ 7120 LABEL$(991,1080)="(((((([graphics]"
FJ 7130 LABEL$(1081,1170)="(((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((
   "
FK 7140 LABEL$(1171,1260)="(((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((("
FL 7150 LABEL$(1261,1350)="(((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((((("
LD 7160 LABEL$(1351,1440)="((((((((((((((((((((((((((((((((((((((((((((((((((([graphics]
   "
CL 7170 LABEL$(1441,1530)="[graphics]
   "
CM 7180 LABEL$(1531,1620)="[graphics]
   "
CN 7190 LABEL$(1621,1710)="[graphics]
   "
EB 7200 LABEL$(1711,1800)="[graphics]
   "
IM 7210 LABEL$(1801,1890)="[graphics]
   "
NT 7220 LABEL$(1891,1980)="[graphics]
   "
HE 7230 LABEL$(1981,2070)="[graphics]
   "
CI 7240 LABEL$(2071,2160)="[graphics]
   "
GU 7250 LABEL$(2161,2205)="[graphics]"
BB 7260 RETURN
```

THE RESOURCE FILE

The Resource File is a new service provided by PAGE 6 to help Atari owners (both 8-bit and ST) find sources of information, help and supply. An entry in this feature does not necessarily imply any endorsement by PAGE 6 and readers are advised to check for themselves to ensure that the information is still current. We would ask any readers who find information to be inaccurate or out of date to let us know so that an entry may be amended or deleted.

RETAILERS

The following retailers, to the best of our knowledge, support Atari 8-bit or ST.

A.S. WOOTTON & SON
116, Edleston Road
Crewe
CW2 7HD
Tel. 0270 214118

SILICON CENTRE
7, Antigua Street
Edinburgh
Scotland
Tel. 031 557 4546

GAMER
71 East Street
Brighton
Sussex BN1 1HQ
Tel. 0273 728681

HI-FI WESTERN LTD.
52, Cambrian Road
Newport
Gwent
Tel. 0633 62790

TRIONIC
144, Station Road
Harrow
Middlesex
Tel. 01 861 0036

COMPUTER WORLD
212, Broad Street
Birmingham
B15 2AY
Tel. 021 643 9100

GUERNSEY COMPUTERS LTD.
33, Commercial Arcade
St. Peter Port
Guernsey
Channel Islands
Tel. 0481 27165

JENNINGS STORES
244 – 248, Hertford Road
Enfield
Middx
Tel. 01 804 1767

LIVINGSTON COMPUTER CENTRE
17, The Mall
Craigshill Shopping Centre
Livingston
West Lothian
Tel. 0506 36978

COMPUTER CENTRE
174, High Street
Hornchurch
Essex
Tel. 04024 75613

GAMES WORKSHOP
Unit 37, West Court,
Birmingham Shopping Centre
Birmingham 21
Tel. 021 632 4804

YORK COMPUTER CENTRE
7, Stonegate Arcade
York
Tel. 0904 641862

RADFORD HI-FI LTD.
52, Gloucester Road
Bristol
Avon
Tel. 0272 428247

MICROBYTE
71, Seaview Road
Liscard
Wallasey
Merseyside L45 4QW
Tel. 051 630 6933

PEATS ELECTRONICS
25, Parnell Street
Dublin 1
Ireland
Tel. 0001 740662

CHIPS
53, Rugby Road
Worthing
Sussex BN11 5NB

LADBROKE COMPUTING LTD.
33, Ormskirk Road
Preston
Lancs. PR1 2QP
Tel. 0772 21474

SOFTWARE EXPRESS
514 – 516, Alum Rock Road
Alum Rock
Birmingham B8
Tel. 021 328 3585

P.F.MURPHY & SONS LTD.
Cross Lanes
Drogheda
Co. Louth
Ireland
Tel. 041 37292

SELECTAVIDEO
4, Belmont Road
Bolton
Lancs. BL1 7AF
Tel. 0204 52804

INTOTO
1, Heathcoat Street
Hockley
Notts. NG1 3AF
Tel. 0602 410987

ORDEM
21, Harris Arcade
Reading
Berks. RG1 1DN
Tel. 0734 474768

ONE STEP BEYOND LTD.
11a, Castle Meadow
Norwich
NR1 3DG
Tel. 0603 663796

GAMES WORKSHOP
95, The Moor
Sheffield
Tel. 0742 750114

MIKES COMPUTER STORE
292, London Road
Westcliff-on-Sea
Essex SS0 7JJ
Tel. 0702 332554

GAMES WORKSHOP
162, Marsden Way
Arndale Centre
Manchester
Tel. 061 832 6863

GAMES WORKSHOP
41a, Broadwalk
Broadmarsh Centre
Nottingham
Tel. 0602 585744

MICRO-TRONICS
27a, Market Street
Tamworth
Staffs
Tel. 0827 51480

FEE'S
194 High Street
Scunthorpe
North Humberside
Tel. 0724 857652

ATARI WORLD
15, Fennell Street
Manchester
M4 3DU
Tel. 061 834 4941

BRIGHTON COMPUTER EXCHANGE
2, Ann Street
Brighton
BN1 4GP
Tel. 0273 686650

The only criterion for an entry in this column is that the retailer must stock PAGE 6. That is the only measure we have that a retailer is genuinely interested in supporting Atari. Phone us on 0785 213928 if you wish to be included.

BBS

Do you run a Bulletin Board which caters mainly for Atari 8-bit or ST? For an entry in this feature please send us details as follows ONLY on a plain sheet of paper headed **RESOURCE FILE – BBS**.

Name: BILL'S BBS
Number: 012 345 9292
Hours: 24 hours
Baud Rate: 300
Features: ST only (5 words max!)

Any background information included will be filed for reference but not published.

USER GROUPS

Do you want others to know about your group? Send the following details ONLY on a plain sheet of paper headed **RESOURCE FILE – USER GROUPS**.

Name: UPPER WAPPING AUG
Contact: Brian Brain
Wapping Towers
Eastwood
LONDON E82
Telephone: 001 345 2424
Members: Local only (5 words max!)

That's all you get! We will not publish any other details as meeting times and places tend to change. Appoint someone responsible to handle any enquiries received.

HELPLINE

Do you have any special experience or knowledge that you would like to share with others? If you don't mind setting aside a few hours to answer the phone you could other Atari owners solve their problems. We suggest that you set aside certain times during which you are willing to receive calls otherwise you may well be woken up in the middle of the night! Please restrict your help to one specialist subject and note that we will only accept one or two entries for each subject. Please supply the following details on a sheet of paper headed **RESOURCE FILE – HELPLINE.**

Name: Harry Clever
Telephone: 001 262 25252
Subject: ATARI BASIC programming
Hours: Mondays 7.30 p.m to 10 p.m. only

Be warned – you may still get the odd idiot phone at 6.30 a.m. on Sunday morning but you will certainly make more friends than enemies. Please do not put your name forward unless you are patient, understanding and really do know your stuff. We will emphasise in the column that readers should only phone at the times indicated so if you do get calls outside that time, feel free to tell them to go away!

IT'S UP TO YOU!

If you feel that your organisation should have an entry in this feature, write to us. Whilst we do have details of many User Groups and Bulletin Boards we have not included these as we do not know if the details are correct.

PAGE 6 reserves the right to delete any entry from this feature for any reason. Inclusion does not imply any endorsement by PAGE 6 and PAGE 6 can accept no responsibility for the accuracy or completeness of an entry. Please tell us if you find any entry out of date.

GETTING TO GRIPS WITH GRAPHICS

Mark Hutchinson's regular column for beginners

For this issue I thought that I would look at graphics. I have been putting this off for some time, not because it is hard to write about, but because it would take up far more room than I am allowed by the Editor. I will tell you about the basic modes but I may not go into as much detail as you would like.

Graphic modes are divided into two types, text and graphics. The basic screens range from the three text modes of GRAPHICS 0, 1 and 2 and from the low resolution (chunky graphics) of GRAPHICS 3 to the high resolution screen of GRAPHICS 8. Believe it or not, all these screens are the same. They are made up of tiny dots (pixels) and are 320 pixels wide by 192 pixels high. The only difference is how the computer handles the screen. For instance, GRAPHICS 0 uses characters that are 8 by 8 pixels square. Thus 320 divided by 8 gives 40 characters per line and 192 divided by 8 gives 24 lines. You can work out mode 1 (16 by 8) and mode 2 (16 by 16).

THE TEXT MODES

GRAPHICS 0

This, though you may not think it, is a specialised screen. It is designed for the input of command lines and will display the full character set. The default colour of blue is not mandatory. It can be changed, along with the border colour, but the characters will only take a lighter or darker shade of the screen colour. You can make characters invisible by setting their colour to that of the background. The characters can be placed anywhere on the screen by using the editing characters. These characters, e.g. TAB, ARROWS, INSERT, can only be utilised in mode 0. I have included a small program (Listing 1) to illustrate their uses.

GRAPHICS 1 & 2.

These differ from mode 0, not only by the fact that the characters are bigger, but that they have a text window (the four lines at the bottom of the screen) which is actually mode 0. The main part is termed the text screen. The normal PRINT command will place characters in the window, but you will needs to use a special device specifier to print to the screen. This is done with PRINT #6;. There are four types of printable characters, normal lower and upper case and inverted lower and upper case but in these two modes upper case only appears on screen and the type of character defines the colour of that character. Listing 2 should demonstrate this clearly and show you how to change the colours of the text.

Now look closely at Listing 3. You will see that the original screen is GRAPHICS 1 with a text window but, for the next example, I needed to extend the screen by getting rid of the text window. To do this I set up a GRAPHICS 1+16, but to keep the text I added 32 (making a total of 49). Using a GRAPHICS 49 command I was able to get rid of the window and keep my text. For some reason this is very seldom, if ever, used.

POKING AROUND.

In both modes, the cursor can be made to disappear by a simple POKE (POKE 752, 1). Other POKEs of interest are 82 and 83 which set the left and right hand margins respectively. The text screen can be extended by adding 16 to the graphic mode, eg GRAPHICS 1+16 or GRAPHICS 17, again shown in the listings.

Probably by now you will know that if you leave the computer for several minutes without using the keyboard the screen colours will begin to change. This is done automatically to stop an image being burnt into the phosphor on the screen. This can be a nuisance when you use joysticks only, but it can be stopped by POKE 77,0 during the running of your program.

The two text modes can be used for graphics by redefining the character set. This is done by making up your own data and storing it in a safe area of RAM then telling the computer where to look for this data each time a key is pressed. Normally location 756 holds a number which, when multiplied by 256 will point to the start of the character data. Just pick a part of RAM evenly divisible by 256 then POKE 765, RAM/256. Just to see this in action, POKE 765 with any random number and list one of the programs. The garbage you will see is because of any random bits of data stored in the location you picked.

Next issue I will have a quick look at the graphic mode 3-7, nothing spectacular, just the basics.

A USEFUL TIP

Before I go, I must pass on a good tip from Len Lawson. If you need only DOS.SYS on a disk (when you wish to only boot up, not use the DUP.SYS) you can use the following without going into DOS to use option H.

OPEN #1, 8, 0, "D:DOS.SYS":CLOSE #1

IN CLOSING

Recently, I have been receiving several letters asking questions about Atari computing. I can only reply to those that have enclosed a SAE, otherwise the answer will appear in this column ... sometime! So, if you are in a hurry for an answer. Write to me, as always, at P.O.BOX 123, BELFAST, BT10 0TB.

I hope to be going to the next ATARI show in April, mainly wandering around the exhibition stands, so perhaps I will meet you there (large hint, Stan!).

Listing 1

```
TK 9 REM *** Set up screen and colours.
ZH 10 GRAPHICS 0:POKE 712,32:POKE 710,96
XG 20 ? "TEST LINE 1."
XY 30 ? "TEST LINE 2."
BM 39 REM *** Use editing characters.
UK 40 ? "→TEST LINE (WITH RIGHT ARROW)."
LO 50 ? "▸TEST LINE (WITH TAB)."
BM 60 ? "↓TEST LINE (WITH DOWN ARROW)."
EW 68 REM *** Press ESC three times then
XD 69 REM *** press CONTROL and ARROW.
HP 70 ? "TEST LINE ←→←↓←→←↑ (WITH ARROWS)
   ."
RS 100 LIST
```

Listing 2

```
OB 109 REM *** Set up screen and suppress
                 the cursor.
GW 110 GRAPHICS 0:POKE 752,1
NR 130 ? "↓  GRAPHIC 0 has a coloured bor
    der you can change (using SETCOLOR 4,C
    ,I or byPOKE 712,X),and ";
OB 140 ? "also a coloured screen(SETCOLOR
     2,C,I or POKE 710,X), where ↓↓→C=colo
    ur,I=intensity,and X=C*256+I."
KB 149 REM *** Set location for 'Last Key
                 Pressed' (764) to zero.
TI 150 POKE 764,255:POSITION 8,22:? "PRES
    S ANY KEY TO CONTINUE"
FM 159 REM *** Wait for key to be pressed
EG 160 IF PEEK(764)=255 THEN 160
ON 170 ? "K↓▸As you may have noticed, the
    re isa space on the left hand side. Th
    is is";
AM 180 ? "a margin. It is controlled by l
    ocation82. Similarly, the right hand m
    argin  is controlled by location 83."
PI 190 ? "↓▸We shall look at these locati
    ons when you are ready."
SZ 200 POKE 764,255:POSITION 8,22:? "PRES
    S ANY KEY TO CONTINUE"
ZO 210 IF PEEK(764)=255 THEN 210
UY 220 ? "K":POKE 710,160:POKE 712,190:PO
    KE 709,0:? "↓▸We can change the left m
    argin by,for example, POKE 82,0."
ZB 230 POKE 82,0:? "↓→ This will mean tha
    t all printing will start on the far l
    eft. We could POKE 82,10 and";
PQ 240 ? " change the right hand margin w
    ithPOKE 83,30":POKE 82,10:POKE 83,30:?
     "▸→→→Now the printing willstart and";
RP 250 ? " end at dif-ferent places to th
    e origionals,which were82,2 and 83,39.
    "
AY 260 ? " We shall now look atthe rest o
    f the TEXT modes with listing 3."
```

Listing 3

```
JY 309 REM *** Set up mode with no cursor
                 and no window.
HM 310 GRAPHICS 1:POKE 752,1
FS 320 ? #6;"  ALL OF THE TEXT ISIN CAPIT
    ALS. COLOURSCAN BE CHANGED USING":POSI
    TION 2,4:? #6;"CAPITALS"
QT 330 POSITION 2,6:? #6;"lower":POSITION
     2,8:? #6;"INVERSE CAPITALS":POSITION
    2,10:? #6;"inverse lower"
LI 335 FOR T=1 TO 5500:NEXT T
TL 341 REM *** Get rid of the window by
OM 342 REM *** using GRAPHICS 1 + 16.
NN 343 REM *** Keep the original text by
GA 344 REM *** adding 32, ie. 1+16+32=49
CG 345 GRAPHICS 49
NM 350 POSITION 2,16:? #6;"THE SCREEN CAN
     BE EXTENDED BY REMOVINGTHE WINDOW. TH
    IS IS DONE";
RF 355 ? #6;" BY ADDING 16 TOTHE GRAPHICS
     MODE.  EG.IN THIS CASE 1+16OR GRAPHIC
    S 17":FOR T=1 TO 6500:NEXT T:? #6;"K"
UF 360 ? #6;" THE DEFAULT COLOURSOF THE T
    EXT CAN BE  CHANGED BY USING THESETCOL
    OR STATEMENT  OR BY USING POKE."
DD 370 POSITION 0,9:? #6;"CAPITALS   POKE
     708 ":POSITION 0,11:? #6;"INV CAPS
    POKE 709 "
LB 380 POSITION 0,13:? #6;"lower       POK
    E 710 ":POSITION 0,15:? #6;"inv low
     POKE 711 "
VK 390 FOR T=1 TO 6000:NEXT T:POSITION 0,
    23:? #6;" NOW FOR graphics 2":FOR T=1
    TO 2000:NEXT T
SC 399 REM *** New screen, so get rid of
                 cursor again!
HZ 400 GRAPHICS 2:POKE 752,1
VN 410 ? #6;"       graphics 2":POSITION 0,
    5:? #6;"  EVERYTHING IS THE SAME AS gr
    aphics 1, BUT TWICE AS BIG."
UF 420 FOR T=1 TO 1000:NEXT T:POKE 764,25
    5:? "K":? "▸PRESS ANY KEY TO CONTINUE"
EA 430 IF PEEK(764)=255 THEN 430
FS 439 REM *** NOTE Edit characters will
                 not work in modes 1 & 2.
SW 440 ? #6;"K▸↓↓ALL DONE"
```

Books

SPEEDSCRIPT 3.0
Compute! Books
£9.95

Reviewed by Eddie Cross

If you want an easy to use Word Processor without the complications of reading through large instructional manuals, but still expect the flexibility given by true commercial packages then Speedscript could be just what you are looking for.

The unusual aspect of Speedscript is that it comes in the form of a book with the actual program having to be typed in. At first sight this may well seem a daunting task as you discover that over half of the publication is dedicated to the machine code listing, but on the plus side there are two proofreader programs that ensure you type everything in correctly. I am definitely not the worlds fastest typist but it only took two evenings to get the program up and running and my decision on seeing the final result was that it was well worth the trouble.

The first thing that you notice is the clarity of text. Speedscript incorporates a little used Atari mode that allows more definable and readable characters, which certainly helps on the eyes after a long spell at the keyboard. All the usual features that you would expect from a Word Processor are incorporated, including Screen Editing, Erasing, Wastebucket, Search and Replace, Saving, Loading, Disk Menu, Usable Memory, Screen Colour, Screen Overscanning, Word Wrapping, Merge, Disk Commands, Printer, Screen Display, Print Formatting etc. There are even four predefined printkeys including CHR$(27) to make usage of the program more self-contained. In fact you can predefine any key you want for your own personalised printer codes. Most of the features are accessed with use of CTRL/SHIFT/OPTION/SELECT keys and are all well documented in the book.

The program includes a mini-dos which allows you to inspect what files you have stored without leaving the main program. This facility allows you to load, save, rename, lock, unlock, delete, update directory and format disk and then by pressing RETURN you are back to where you left off.

Amongst the other features that I liked was the fact that when you erased a passage of text it was not lost automatically but stored in the 'TEXT BUFFER' which could be restored at a later date if you found out that you had erased by error. Therefore it was very easy to swap parts of the text around without losing any of it when tidying up your letter or document in this mode.

All normal formatting commands are adhered to like changing margins, page lengths, margin release, centering, indentation etc. including also an INFORMATION command, that works like REM in BASIC. Although written in your text it does not print out, and is very handy when you want to make some note about the file.

The program is so devised that you can enter your own printer codes and save them, so that you don't have to enter them every time you go to use Speedscript. This makes the program compatible with almost every printer.

If you are a cassette based user and are a little bit fed up with all the 'disk only' Word Processing software then have no fear as Speedscript works equally as well in this media, allowing you to save all your files to tape.

All in all Speedscript is a brilliant Word Processing package and is a joy to use. So if you can't afford the more expensive software on the market, then you will not go far wrong by purchasing SPEEDSCRIPT 3.0!!. ●

Contact

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410 RECORDER FOR SALE: Still boxed. No mains lead but still has computer recorder lead. Can use a Grandstand games plug. Offers to Marc Jones, 5, Dovesmead Road, Heswall, Wirral, Merseyside, L60 1XL

PENPALS WANTED: Any age, any country. I have an XC11 recorder and 1050 disk drive. I also have a Touch Tablet and would like to swap pictures. I would also like to swap hints and tips on games. Contact Marc Jones, 5, Dovesmead Road, Heswall, Wirral, Merseyside, L60 1XL

MERSEYSIDE CONTACT: I would like to contact Atari owners living in and around Merseyside. I am hoping to get a 520ST soon but people with any Atari computers are welcome to get in touch. I have an 800XL and 1050 disk drive. Ian Hindley, 55, Poplar Grove, Prescot, Merseyside, L35 5AY. Tel. 051 426 1475

PEN PAL WANTED: I have an 800XL with a 1010 cassette and if any Atari enthusiast would like a pen pal I will answer all letters. Please write to Vic Terry, 116, Dunlop Point, West Silvertown, London, E16 2AJ

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NO LIMIT: There is no limit for me in corresponding with other Atari owners. I would like to get in touch with users all over the world. I have 800XL, 130XE, 1050 drive and 1029 printer. Please write to Marco D'Alessandro, Verena Conzett-Strasse 20, CH-8804, Zurich, Switzerland.

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PEN PALS WANTED: I would like to swap ideas with people all around the world about hardware and software. I have a 256k 800XL, 1050, 850 and TXP-8100 printer. Please write to Michel van Deventer, Postbus 214, 2350 AE Leiderdrop, Holland

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UPDATE

AUTOCHECK 4.0 (ISSUE 24): Due to an Editorial brainstorm towards the end of last year we printed the wrong version of AUTOCHECK 4.0 which contained a bug that meant that the screen was not updated properly. Apologies to Peter Franey and to all readers who were confused. The following lines should be added/substituted to the original listing.

```
HE 920 IF PEEK(Q279)=Q33 THEN GOSUB Q27:G
   OSUB 980:RR=RR-Q1:GOSUB 7995:RETURN
TP 930 IF PEEK(Q279)=Q32 THEN P=VAL(AM$(C
   H*Q9-Q8,CH*Q9)):GOSUB 985:CH=99.99:GOS
   UB 950:POP :GOTO 2102
NK 960 BAL=BAL+P:GOTO 967
RC 965 BAL=BAL-P
TT 967 IF CH=99.99 THEN CH=Q0
UT 985 FOR I=CH TO Q201:IF I=Q201 OR DATE
   $(Q33*I-Q32,Q33*I)="         " THEN X=I-Q
   1:GOTO 1050
KQ 2230 GOSUB Q27:TRAP 2230:POSITION Q31,
   Q22:? "AMOUNT ";:PP=Q31:GOSUB 9500:TRA
   P 40000:P=VAL(C$)
KL 2235 IF P<Q0 OR P>999999.99 THEN 2230
DZ 4003 IF DATE$(I*Q33-Q32,I*Q33)<=Z$ THE
   N XX=RR:GOTO 4070
CW 9815 IF N<>Q78 AND N<>Q89 THEN 9800
```

1029 SCREEN DUMP (ISSUE 25): The program as it stands prints the screen in inverse (sometimes it doesn't!) and Darren Clarke of Nottingham has sent in the following fix. Substitute the following lines for those in the original listing.

```
LS 10100 RESTORE 10110:FOR P=1 TO 63:READ
    BYTE:POKE 1695+P,BYTE:POKE 712,BYTE:N
   EXT P
ZS 10110 DATA 104,104,141,181,6,104,141,1
   80
BU 10120 DATA 6,104,141,189,6,104,141,188
RP 10130 DATA 6,160,193,173,40,129,136,24
   0
UV 10140 DATA 37,73,255,141,235,52,238,18
   8,6,240
TG 10150 DATA 21,173,180,6,56,233,40,141
PO 10160 DATA 180,6,144,4,24,76,179,6
FY 10170 DATA 206,181,6,76,179,6,238,189
EJ 10180 DATA 6,76,195,6,96
```

RAMBIT REVIEW (ISSUE 24): Derryck Croker has advised that an upgraded version of the software mentioned (version VII) is now available which contains its own Operating System making transfer of multi-stage cassettes much easier. Only works on XL/XE models though.

SHOGI (ISSUE 25): Line 14030 got chopped in half somehow. The correct line is as follows.

```
YP 14030 PRINT "*LNSGKGSNL*A*● ●  |◆ ◆*\
    / ● |*   |    ** R        B *B*       | S *
   \ / ●G●|* ●|●   *";
```

Also, in the rush to get issue 25 out before Christmas, a couple of the columns in the listings got transposed (my long standing paste-up nightmare!). Good job it doesn't matter which order you type the lines in! Apologies for any confusion.

YOUR OWN CURSOR

Clive Savage brings you an alternative if you are cursing that cursor

Do you want to enhance your programs by providing an alternative cursor? As well as a different shape, this program can give you a flashing cursor if you wish.

The effect is achieved by using Player 1 and the Vertical Blank Interrupt and you should have no problems in incorporating the routine into your own programs, providing they do not use similar routines. Note also that RAMTOP is moved down to provide a protected area, so be careful of this.

The shape of the cursor is determined by the DATA in lines 32664 and 32665 and follows the normal binary make-up of characters. You can alter this DATA to have any shape you wish.

Using the routine is simple. Just run it and use the console keys. START will change between the normal or special cursor, OPTION will change the shape of the cursor and SELECT will provide a flashing or steady cursor.

Have fun!

```
UX 32310 REM ****************************
VY 32320 REM *  PLAYER MISSILE CURSOR   *
IW 32330 REM *      by Clive Savage     *
OP 32340 REM * ------------------------ *
HJ 32350 REM * PAGE 6 MAGAZINE-ENGLAND *
VR 32360 REM ****************************
EC 32380 REM OPTION - CHANGE SHAPE
             SELECT/ANY KEY FOR NORMAL
             CURSOR
SU 32390 REM START FOR FLASHING CURSOR
ZG 32400 DIM BYTE$(120):I=0
ET 32410 Z=PEEK(106)-8:POKE 106,Z-1:GRAPH
    ICS 0:Z1=Z*256
YD 32420 POKE 559,62:POKE 704,15
BX 32430 ? :? "STRING DATA"
UT 32440 FOR I=1 TO 120:READ B:? B;",";
HO 32450 BYTE$(I,I)=CHR$(B):NEXT I
RZ 32460 ? :? "PAGE 6 DATA"
CK 32480 FOR I=0 TO 247:READ B:? B;",";
CW 32490 POKE 1536+I,B:NEXT I
BX 32500 REM
VF 32510 X=USR(ADR(BYTE$),Z1)
SM 32520 RESTORE 32664
XZ 32530 ? :? "PLAYER DATA"
DL 32540 FOR I=0 TO 15:READ B:? B;",";
DF 32550 POKE Z1+I,B:NEXT I:END
KV 32600 REM *** MACHINE CODE DATA ***
ZT 32610 DATA 104,104,133,208,141,250,6,1
    41
JX 32611 DATA 7,212,104,133,207,141,251,6
KH 32612 DATA 165,208,133,204,165,207,133
    ,203
VO 32613 DATA 24,169,8,101,204,133,206,16
    9
BB 32614 DATA 0,170,129,203,230,203,165,2
    03
IE 32615 DATA 201,255,208,243,230,204,164
    ,204
VC 32616 DATA 196,206,208,235,165,208,133
    ,204
GR 32617 DATA 165,207,133,203,24,165,204,
    105
ON 32618 DATA 4,133,204,133,206,169,32,13
    3
MY 32619 DATA 203,133,205,160,0,177,207,1
    45
EA 32620 DATA 203,200,192,8,208,247,169,3
QY 32621 DATA 141,29,208,169,1,141,240,2
RX 32622 DATA 169,0,141,255,6,165,203,133
AX 32623 DATA 205,165,204,133,206,160,0,1
    62
BW 32624 DATA 6,169,7,32,92,228,96,0
LN 32627 REM PAGE 6 MACHINE CODE DATA
UN 32630 DATA 173,255,6,41,8,208,33,169
QC 32631 DATA 1,44,31,208,240,17,169,2
IB 32632 DATA 44,31,208,240,13,169,4,44
BK 32633 DATA 31,208,240,9,24,144,9,76
SI 32634 DATA 192,6,76,215,6,76,147,6
PV 32635 DATA 169,0,133,77,173,255,6,41
ZB 32636 DATA 4,240,18,165,20,208,14,173
NQ 32637 DATA 253,6,73,3,141,253,6,141
TF 32638 DATA 29,208,76,208,6,165,85,10
VV 32639 DATA 10,24,105,47,141,0,208,165
MV 32640 DATA 84,10,10,10,24,105,32,133
VO 32641 DATA 205,160,8,136,177,207,145,2
    05
YT 32642 DATA 192,0,208,247,165,205,197,2
    03
CR 32643 DATA 240,15,169,0,160,8,136,145
RT 32644 DATA 203,192,0,208,249,165,205,1
    33
GO 32645 DATA 203,173,255,6,41,8,240,16
SU 32646 DATA 206,254,6,173,254,6,208,8
BA 32647 DATA 173,255,6,73,8,141,255,6
WG 32648 DATA 76,98,228,32,229,6,173,255
CY 32649 DATA 6,41,2,208,16,173,251,6
YL 32650 DATA 133,207,173,255,6,73,2,141
RN 32651 DATA 255,6,76,98,228,24,173,251
NY 32652 DATA 6,105,8,133,207,173,255,6
NL 32653 DATA 73,2,141,255,6,76,98,228
KY 32654 DATA 32,229,6,173,255,6,73,4
IY 32655 DATA 141,255,6,169,3,141,29,208
JN 32656 DATA 169,250,133,20,76,98,228,32
JJ 32657 DATA 229,6,173,240,2,73,1,141
BI 32658 DATA 240,2,76,98,228,173,255,6
TJ 32659 DATA 9,8,141,255,6,169,10,141
WE 32660 DATA 254,6,96,0,83,58,155,0
MM 32662 REM  DATA FOR CURSOR SHAPE
HO 32664 DATA 48,0,0,72,72,0,0,48
GL 32665 DATA 120,72,72,72,72,72,72,120
```

TECHNOLOGY SO ADVANCED ...

MEMORY
* 512Kbytes RAM (520ST-M, FM)
* 1024Kbytes RAM (1040ST-F)
* 192Kbytes ROM
* 128Kbytes external plug-in ROM option

ARCHITECTURE
* Motorola 68000 Central Processing Unit (CPU) with a clock speed of 8MHz
* 16-bit external data bus
* 32-bit internal data bus
* 24-bit address bus
* 8×32-bit data & address registers
* 7 levels of interrupts
* 56 instructions
* 14 addressing modes
* 5 data types
* DMA (Direct Memory Access)
* real time clock as standard

GRAPHICS
* full bit-mapped display
* palette of 512 colours

Using Atari Monitors (on 520 & 1040):
* 640×400 high resolution - monochrome
* 640×200 medium resolution - 4 colours
* 320×200 low resolution - 16 colours
* 80 column text display (40 col low res)

Using Domestic TV (on 520):
* 640×200 medium resolution - 4 colours
* 320×200 low resolution - 16 colours
* 40 columns × 25 line text display

SOUND AND MUSIC
* 3 programmable sound channels
* frequency programmable 30Hz - 125KHz
* programmable volume
* wave & dynamic envelope shaping
* programmable attack, decay, sustain, release
* Musical Instrument Digital Interface (MIDI)
* MIDI allows connection of synthesisers etc.

MOUSE
* high precision
* 2 button control
* free with 520ST-FM/1040ST-F
* non slip ball motion sensor
* removable ball for easy cleaning

STANDARD SOFTWARE
* GEM desktop + TOS operating system
* ST BASIC interpreter/language system

INPUT/OUTPUT
* MIDI out .... (5 pin DIN) 31.25K baud
* MIDI in .... (5 pin DIN) 31.25K baud
* audio out ... 1.0V DC peak to peak, 10K ohm
* audio in .... 1.0V DC peak to peak, 10K ohm
* RGB monitor .... 1.0V DC, 75 ohm
* mono monitor .... 1.0V DC, 75 ohm
* mono horizontal scan rate 35.7KHz
* mono vertical scan rate 71.2KHz
* sync .... 5V DC (active low) 3.3K ohm
* modem/serial .... RS232C, 50 to 19,200 baud
* floppy disk .... 250 Kbits/s
* hard disk .... 11.3 Mbits/s
* mouse .... standard Atari connector
* joystick .... standard Atari connector
* cartridge port .... 128K capacity
* RF output (520ST-FM) .... for TV use

OPERATING SYSTEM
* TOS with GEM environment in ROM
* hierarchical file stucture with sub-directories and path names
* user interface via GEM, with self explanatory command functions
* multiple windows + icons
* window resizing, re-positioning and erasing
* drop down menus (selected by mouse)
* GEM virtual device interface

COMMUNICATIONS
* RS-232C serial modem port
* 8-bit parallel printer port
* MIDI port (also for networking use)
* VT52 terminal emulation

KEYBOARD
* standard QWERTY typewriter format
* 95 full stroke keys
* 10 function keys
* 18 key numeric keypad + cursor keys
* variable auto-repeat & key click response
* keyboard processor reduces CPU overhead

... IT'S AFFORDABLE

ONLY FROM SILICA

Finally, there's a personal computer that not only solves problems like other computers, but also solves the one problem that other computers have created. Affordability. Silica Shop are pleased to present the ST range of personal/business computers from Atari. The ST was designed utilizing the most recent breakthroughs in semiconductor technology, producing a personal computer that performs tasks with fewer parts. Which means it costs less to make. And less to buy. The latest ST computers now include built in power supplies and built in disk drives. The TOS operating system and GEM window environment are now on ROM chips which are already installed in the ST keyboard. This enables automatic instant booting when you switch on. Silica Shop are pleased to offer the complete Atari ST range. Our mail order department is situated in Sidcup and we have 4 retail outlets at Sidcup, Orpington, Lion House (Tottenham Court Rd) and Selfridges (Oxford Street). We have eight years experience of Atari products, longer than any other UK company, and are well established as the UK's No.1 Atari specialist. With a group turnover of over £5 million and in excess of 70 staff, we provide unbeatable service and support. We provide several facilities which you will find invaluable during your Atari computing life and most of these facilities are available **ONLY FROM SILICA.** We suggest that you read through what we have to offer, before you decide where to purchase your Atari ST.

FREE STARTER KIT - Only From Silica

When you purchase any Atari ST keyboard, you will not only receive the best value for money computer on the market, but you will also receive the following from Atari Corporation as part of the package:

** BASIC Language Disk * BASIC Manual * ST Owners Manual * TOS/GEM on ROM*

If you buy your ST from Silica Shop, you will also receive:

** NEOchrome - colour graphics program * 1st Word - Word Processor*

In addition, we at Silica would like to see you get off to a flying start with your new computer, so we have put together a special **ST STARTER KIT** worth over £100, which we are giving away **FREE OF CHARGE** with every ST computer purchased at our normal retail prices. This kit is available **ONLY FROM SILICA** and is aimed at providing users with a valuable introduction to the world of computing. We are continually upgrading the ST Starter Kit, which contains public domain and other licensed software, as well as books, magazines and accessories all relevant to ST computing. Return the coupon below for full details.

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At Silica Shop, we have a dedicated service department of five full time Atari trained technical staff. This team is totally dedicated to servicing Atari computer products. Their accumulated knowledge, skill and experience makes them second to none in their field. You can be sure that any work carried out by them is of the highest standard. A standard of servicing which we believe you will find **ONLY FROM SILICA**. In addition to providing full servicing facilities for Atari ST computers (both in and out of warranty), our team is also able to offer memory and modulator upgrades to ST computers.

1Mb RAM UPGRADE: Our upgrade on the standard Atari 520ST-M or 520ST-FM keyboard will increase the memory from 512K to a massive 1024K. It has a full 1 year warranty and is available from Silica at an additional retail price of only £86.96 (+VAT = £100).

TV MODULATOR UPGRADE: Silica can upgrade the 1040ST-F to include a TV modulator so that you can then use it with your TV set. This is an internal upgrade and does not involve any untidy external boxes. A cable to connect your ST to any domestic TV is included in the price of the upgrade which is only £49 (inc VAT). The upgrade is also available for early 520ST computers at the same price.

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LONDON .... **01-629 1234 ext 3677**
Selfridges (1st floor), Oxford Street, London, W1A 1AB

520ST-M

The affordability of Atari computers is reflected in the price of the 520ST-M keyboard, which is a mere £259 (inc VAT). This version of the ST comes with 512K RAM, as well as a modulator and lead for direct connection to any domestic TV. The price does not include a mouse. In addition, when you buy your 520ST-M from Silica, you will also receive the FREE Silica 'ST Starter Kit'. During 1987, many software houses will be producing games software on ROM cartridges, which will plug directly into the cartridge slot on the 520ST-M keyboard, giving instant loading without the expense of purchasing a disk drive. With the enormous power of the ST, you can expect some excellent titles to be produced, making this the ultimate games machine! If your requirement is for a terminal, then the 520ST-M can fulfill this role too. Leads are available to connect the ST to a variety of monitors, and with the imminent introduction of terminal software on ROM cartridge, the ST provides a low price terminal for business use. If you wish to take advantage of the massive range of disk software available for the ST range, you will need to purchase a disk drive. Atari have two floppy disk drives available, a ½ Mbyte model £149 and a 1Mbyte model £199. Full details of these drives, as well as the Atari 20Mbyte hard disk are available on request. If required at a later date, the mouse may be purchased separately.

£259

520ST-FM

The 520ST-FM with 512K RAM and free mouse, represents a further breakthrough by Atari Corporation in the world of high power, low cost personal computing. This model is the latest addition to the ST family, and is not only powerful, but compact. It is priced at only £399 (inc VAT) a level which brings it within the reach of a whole new generation of computer enthusiasts. When purchased from us, it comes with the FREE Silica 'ST Starter Kit' see paragraph on the left. To make the 520ST-FM ready for use straight away, Atari have built into the keyboard a ½ megabyte disk drive for information storage and retrieval, allowing you easy access to the massive range of disk based software which is available for the ST. This new computer comes with all the correct cables and connections you will need to plug it straight into any standard domestic television set. You do not therefore have to purchase an Atari monitor. If you do require a monitor however, these are available with the 520ST in the following money saving packages:

520ST-FM Keyboard Without Monitor - **£399** *(inc VAT)*
520ST-FM Keyboard + High res mono monitor - **£499** *(inc VAT)*
520ST-FM Keyboard + Low res colour monitor - **£599** *(inc VAT)*
520ST-FM Keyboard + Med res colour monitor - **£699** *(inc VAT)*

Because the 520ST-FM has its own power transformer built into the keyboard, there are no messy external adaptors to clutter up your desk space. You are left with only one mains lead, serving both the disk drive and the computer. You couldn't ask for a more stylish and compact unit.

£399

1040ST-F

For the businessman and the more serious home user, Atari have their most powerful model, the 1040ST-F with 1028K RAM. This low cost powerhouse can be introduced into a business environment as a stand-alone system, or can support a mainframe computer as a terminal. The 1040ST-F not only features twice as much memory as the 520ST-FM, but also includes a more powerful built-in disk drive. The drive featured on the 1040ST-F is a one megabyte double sided model. The extra memory facility of the 1040ST-F makes it ideal for applications such as large databases or spreadsheets. Like the 520ST-FM, the 1040ST-F has a mains transformer built into the console to give a compact and stylish unit with only one mains lead. The 1040ST-F is also supplied from Silica Shop with a free software package and 'ST STARTER KIT'. In the USA, the 1040ST-F has been sold with a TV modulator like the 520ST-FM. However, for the UK market, Atari are manufacturing the 1040ST-F solely with business use in mind and it does not currently include an RF modulator, this means that you cannot use it with a domestic TV (Silica Shop do offer a modulator upgrade for only £49). The 1040ST-F keyboard costs only £599 (inc VAT) and, unless a modulator upgrade is fitted, will require an Atari or third party monitor. There are three Atari monitors available and the prices for the 1040 with these monitors are as follows:

1040ST-F Keyboard Without Monitor - **£599** *(inc VAT)*
1040ST-F Keyboard + High res mono monitor - **£699** *(inc VAT)*
1040ST-F Keyboard + Low res col monitor - **£799** *(inc VAT)*
1040ST-F Keyboard + Med res col monitor - **£899** *(inc VAT)*

The 1040ST-F comes with a mouse controller and includes 1Mbyte of RAM. It has a 1Mbyte double sided disk drive and mains transformer, both built into the keyboard to give a compact and stylish unit, with only one mains lead.

£599

ATARI ST

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